THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—23RD YEAR. SYDNEY, SATURDAY, DECEMBER 19, 1936. No. 25.

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DETERMINATION OF BLOOD COMPATIBILITY BEFORE BLOOD TRANSFUSION AND AVOIDANCE OF SUBSEQUENT REACTIONS.

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BLOOD transfusion is today a common therapeutic measure frequently undertaken as an emergency following acute blood loss or to combat shock, or by plan in some grave disease or severe grade of primary or secondary anæmia. It is advisable, even though it be an emergency measure, that every precaution against any untoward reaction in the patient should be taken, so that his discomfort may be minimized and his chances of recovery enhanced. To this end the first essential to a successful transfusion is the determination of the compatibility of the blood of the recipient and prospective donor.

Classification of the Blood Groups.

There are, as is well known, four classical blood groups in man based on the theory of Landsteiner of the existence of two specific iso-agglutinins in the serum and two corresponding iso-agglutinogens in the erythrocytes. These occur independently of disease. These groups are designated according to the classification of Jansky and Moss by numerals I, II, III, IV (Groups I and IV of Jansky being reversed in the Moss classification), and by the Commission for the Standardization of Sera of the Public Health Committee of the League of Nations by an alphabetical terminology according to the agglutinogen content of the erythrocytes as *AB, A, B, O*. The corresponding agglutinins are denoted by the Greek letters α, β and o (zero). The last mentioned is the more desirable nomenclature, and its use is now generally favoured. The phenomenon of hæmagglutination follows immunological laws, so that when an antigen (agglutinogen in the red cells) comes in contact with the corresponding anti-

body (agglutinin in the serum of plasma) union takes place in a demonstrable manner and agglutination of the cells into irregular clumps results. The existence *in vivo* of an agglutinogen and the corresponding agglutinin is therefore not possible. Landsteiner formulated the law that "in a blood containing a given agglutinogen the serum will also contain all the iso-agglutinins which are incapable of acting on the said agglutinogen"; and this in the main is true. Guthrie and Huck[1] have pointed out that there are nine possible combinations, presupposing the presence or absence of either or both agglutinogens *A* and *B* and the corresponding agglutinins, and they have encountered such bloods in examining a large series. There is some doubt as to whether the absence of agglutinin is an actual fact or only a quantitative variation, being present in too small a quantity to be demonstrated by present methods. The essential factor in the blood is the agglutinogen, which behaves as a Mendelian dominant and which generally precedes the appearance of agglutinins.

From Table I it will readily be understood that persons of Group *AB* can act as universal recipients, as their serum contains no agglutinins to act on the cells of any other group. Similarly, individuals belonging to Group *O* can act as universal donors, as their cells contain no agglutinogen to be acted upon by the serum of any group. The advisability of using universal donors will be discussed later.

TABLE I.

Group, Moss Classification.	Agglutinogen Content of Erythrocytes.	Complementary Agglutinins in Serum.	Percentage in English Population.	Remarks.
I	*AB*	o	3·0	Universal Recipient
II	*A*	β	43·4	
III	*B*	α	7·2	
IV	*O*	$\alpha\beta$	46·4	Universal Donor

Technique of Blood Grouping.

Whenever possible, compatibility tests should be carried out by: (*a*) The indirect method, in which the blood group of both recipient and donor is determined. This ensures the use of a donor of the same group as the patient, if such is available. (*b*) The direct method, which consists in the matching of the serum of the recipient against the cells of the donor. As the interaction of the agglutinogen and its corresponding agglutinin is not only a qualitative but a quantitative one, it is possible that weak reactions may be overlooked in either test, but the combination of the two greatly minimizes the chances of error.

Indirect Typing.

For the indirect method, involving the determination of blood groups, test sera of Groups *A* and *B* are theoretically required. It is, however, advisable to combine these with the routine use of a Group *O* serum containing both agglutinins, which acts as a useful control against deterioration of *A* or *B* serum. If agglutination results on adding red cells to *O* serum and not with the *A* or *B* serum, it is an indication that either *A* or *B* serum has lost its efficient agglutinating titre, and fresh sera should be obtained. Where indirect typing is alone relied on, an erroneous diagnosis of a Group *O* in a donor may be fraught with very serious consequences for the recipient. The agglutinin titre of serum varies considerably in different individuals. Test sera of high titre should be selected, and, if they are sterile and stored under optimal conditions in a refrigerator, the titre may remain unimpaired for many months. It is unnecessary to inactivate the serum. To guard against loss of titre it is advisable to test the sera against known *A* and *B* cells at frequent intervals. Deterioration of test serum also probably accounts for the occasional assumption that a person's blood group has changed.

In country districts, where perhaps there is no great demand for blood transfusions, it is better to determine the blood groups of readily accessible persons and obtain fresh sera from the necessary groups as required.

A few drops of blood to be tested are added to a little 2% citrated saline solution and are further diluted with saline solution to make approximately a 5% suspension. The use of too concentrated a suspension of cells is to be avoided. For convenience of observation a slide is divided into three compartments by means of a grease pencil, and a drop of test serum of each group is placed in the appropriate division. To each drop an approximately equal amount of 5% suspension of erythrocytes to be tested is added. Mixing of the serum and cells is aided by a match followed by rocking backwards and forwards of the slide, which aids agglutination and tends to break up rouleaux.

In the majority of cases, agglutination, when it occurs, is obvious to the naked eye within a few minutes, with the typical brick dust deposit in clear serum. With negative results it is advisable to allow at least ten minutes for weak reactions to occur and up to thirty minutes in doubtful cases, precautions being taken to prevent drying. When uncertain results are obtained the macroscopic method can be supplemented by microscopic observation when rouleaux formation, in which the cells are arranged in more or less regular piles, can more readily be distinguished from true agglutination in which the cells are irregularly massed.

According to the resultant reaction the cells fall into:

Group *AB* when agglutination takes place with *A*, *B* and *O* sera.
Group *A* when agglutination takes place with *B* and *O* sera.
Group *B* when agglutination takes place with *A* and *O* sera.
Group *O* when agglutination takes place with no serum.

Direct or Cross Typing.

Direct or cross typing consists in the matching of the recipient's serum against the donor's cells. For this purpose two cubic centimetres of non-citrated

blood from the patient are necessary. Time must be allowed for the blood to clot and the serum to separate. The serum is centrifuged if necessary and then a drop is mixed with a drop of the donor's cell suspension and any reaction is closely observed. Time must again be allowed for the detection of weak reactions.

The matching of the donor's serum against the recipient's cells is as a rule unnecessary, as the blood is so rapidly diluted on entering the recipient's blood stream that it would have little effect on the recipient's cells. Also the agglutinins of the entering blood tend to be adsorbed by the recipient's cells without these being agglutinated.

It will readily be seen that either method alone, especially in inexperienced hands, may have serious results for the patient, owing to misinterpretation of the test; whereas, with the combination of the two one feels that all reasonable precautions against incompatibility have been taken, and the little extra time spent is well justified.

In no case can the mixing of a drop of whole or citrated blood from both donor and recipient be regarded as an adequate test of compatibility. In this way no account is taken of the dilution of the serum, which may be of low titre in the undiluted state, nor the concentration of the cells.

Atypical Reactions.

Certain phenomena may be met with which may lead to some confusion in the determination of the blood group. Of these the chief are the following:

Pseudo-Agglutination. — Pseudo-agglutination is due to excessive rouleaux formation. It frequently occurs in conditions in which a greatly increased blood sedimentation rate may be present, for example, pneumonia, tuberculosis, pregnancy, and is a property of the serum to agglomerate its own or other red cells. This phenomenon would be encountered in matching the recipient's serum against cells from prospective donors.

The serum may be deprived of its rouleaux-forming properties by the addition of certain substances, for example lecithin or kaolin, or more simply by dilution with normal saline solution. Mechanical agitation, as mentioned above, will also serve to distinguish the two conditions, and microscopic observation must be resorted to in cases of doubt. This reaction is not less at 37° C. than at room temperatures, and may be greater.

The active substance is not absorbable by treatment with erythrocytes, as is the case in iso-agglutination.

Cold Agglutination.—Cold agglutination is a phenomenon which is usually demonstrable only at low temperatures (0° to 5° C.). This range is occasionally increased, and cold agglutination may then be met with under cold working conditions and may be confused with true iso-agglutination. It disappears at 37° C. When the individual's own cells are agglutinated in this manner by his own serum it is termed "autoagglutination", and when between serum and cells of different individuals, "cold agglutination". Among the conditions in which this phenomenon appears are hæmolytic icterus of acquired type, paroxysmal hæmoglobinuria, certain anæmias and cirrhosis of the liver.

Cold agglutination is probably due to a non-specific agglutinin which acts on all four groups, but usually only at low temperatures.

The active principle is absorbed by treatment with erythrocytes, and is therefore of the nature of a true agglutinin. It is not affected by dilution of the serum. It can be avoided by carrying out the blood grouping tests at a temperature of 37° C.

The Presence of Subgroups.

By presupposing the possible presence or absence of one or both agglutinogens *A* and *B*, as mentioned above, the blood group of an individual must of necessity fall into one of four groups.

Guthrie and Huck,[2] by means of absorption experiments, were convinced of the presence of another agglutinogen, which they called *C*, with its corresponding agglutinin γ. The additional agglutinogen was found associated with *A*. Qualitatively different agglutinins have also been detected in sera *O* and *B* by Landsteiner and Witt.[3]

Selection of Donors.

First call should be on the relatives and friends of the patient, if available; these should be indirectly and directly grouped for the reasons given above.

The donor of choice should be a person of the same group as the recipient, between twenty and thirty years of age, with a hæmoglobin determination of not less than 11·2 grammes per 100 cubic centimetres (80%, using a standard of 14·0 grammes of hæmoglobin per 100 cubic centimetres of blood), and with no history of communicable diseases, such as syphilis, malaria and allergic manifestations.

When a transfusion club donor is called upon, it is best to select one of the same group as the patient rather than a universal donor. The selection of such a donor does not obviate the necessity for cross typing the patient's serum against the donor's cells.

If time allows, it is advisable that the donor fast for some hours before the collection of the blood, so as to avoid possible reactions from the products of digestion.

The Use of Universal Donors.

The use of Group *O* donors, except for Group *O* patients, should preferably be made only when one of the same group as the patient is not available. Although the donor's cells will not be agglutinated by the plasma of any group and the agglutinins are gradually diluted by the recipient's plasma, so that they do not reach a concentration at which agglutination takes place, the agglutinins in the donor's plasma may occasionally be of such high titre or the patient suffering from a severe grade of anæmia, with comparatively few circulating erythrocytes, that agglutination may result, causing a definite reaction.

In massive transfusions, as described by Wood,[4] in which 2,000 to 4,000 cubic centimetres of blood from several donors are introduced by the drip method into the patient's circulation, it is essential that all donors should be of the same group as the patient. The introduction of such a large amount of plasma from universal donors into the patient's circulation, if of other than Group *O*, would almost certainly lead to agglutination of the cells, especially in the presence of a marked anæmia. The mixing of a Group *O* blood with one of the same group as the patient, if other than an *O*, would of course lead to agglutination in the flask before introduction into the patient's circulation. The compatibility of the donors one with another should also be determined if practicable.

Repeated Transfusion from One Donor.

Repeated transfusion from the same donor calls for a direct matching test before each transfusion. Subsidiary agglutinogens in the donor may act as antigens provoking the formation of the corresponding agglutinins, and at a subsequent transfusion after a few days' interval agglutination may result. In any case, anaphylactoid reactions may also result, in spite of apparent compatibility, and it is preferable not to use the same donor more than once.

Other Important Factors.

Other factors contributing to a successful transfusion are as follow:

1. The indirect citrate method of transfusion is the one in common use. Citrate reactions are known to occur, and to minimize these the concentration of sodium citrate in the transfused blood should not exceed 0·2% to 0·3%. The sodium citrate should be freshly prepared and sterilized, the distilled water used being fresh, trebly distilled. Any sodium citrate solution left over should be discarded. It readily becomes contaminated with organisms of the coliform group.

2. The blood from the donor should be used as soon as possible after collection to avoid changes taking place in the proteins of the blood, which may give rise to toxic symptoms.

3. Too rapid an injection of the blood should be avoided. At least twenty to thirty minutes should be taken for the introduction of one pint in an adult, and there are distinct advantages in the use of the drip method. A short, sharp cough is regarded as the danger signal in the introduction of too much blood.

4. The blood should be kept as near body temperature as possible during transfer from the donor to the patient.

5. All apparatus used should be scrupulously clean and as much rubber tubing as possible should be eliminated, on account of the difficulties of cleaning it. Glass tubing could be substituted, with rubber connexions for flexibility.

Reactions.

Mild reactions may occur in the recipient, even when every attention has been given to the determination of compatibility of the donor and recipient as well as to the other factors mentioned. There may be a slight rise of temperature with very little general disturbance, or there may be shivering, headache, pain in the back, nausea, giddiness, vomiting and sweating, with a subsequent high temperature and possibly urticaria.

It is difficult to offer an explanation for these reactions. Incompatibility between the other formed elements of the blood is a theory put forward, but a more likely explanation would be the changes that probably take place in the blood while it remains outside the vascular system.

The use of an incompatible donor will cause severe reactions, possibly leading to death of the recipient. Symptoms, which begin to appear early in the transfusion, consist of fullness in the head, followed by pains in the lumbar region, falling pulse rate, loss of consciousness, heavy and laboured breathing, with rigor and a rising temperature. Hæmoglobinuria results from hæmolysis following the agglutination of the erythrocytes and the precipitation of hæmoglobin in the tubules in an acid urine, as pointed out by Baker and Dodds.[5] When such an accident occurs, an effort should be made to alkalinize the urine as soon as possible.

Autotransfusion.

The reintroduction of blood extravasated into one of the larger body cavities to the circulation is not without considerable danger, owing to the changes that take place in the formed elements and disintegration of plasma proteins whereby it attains definite toxic properties. One would also need to be sure that no likely infection of the blood had taken place. Fatal reactions have resulted from the transfusion of blood which has remained for more than a few hours outside the vessels, and the general consensus of opinion is that it is preferable to obtain fresh blood from a donor if a transfusion is advisable.

Transfusion in Infants.

The agglutinogens are usually well defined at birth, although they may not reach their full titre for some considerable time. An infant's blood can therefore, in the majority of cases, be assigned to its blood group according to the usual methods employed. The blood group, when once established, is irrevocably fixed. Any evidence to the contrary can probably be attributed to faulty technique and the employment of deteriorated test sera.

The agglutinins, however, may be absent at birth, but become established at any time up to two years of age. Transitory agglutinins of the same type as the mother have been shown to be present at birth, but disappear within a few weeks. Fully developed agglutinins differing from the maternal agglutinins may be present at birth, so that it is essential to

use the same tests for infants and not to assume that the mother's blood is in all cases compatible.

Acknowledgements.

For the above explanations of the difficulties encountered in many blood grouping tests for patients in a large metropolitan hospital I am chiefly indebted to the works of Snyder[6] and Lattes.[7]

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THE TECHNIQUE OF CONTINUOUS INTRAVENOUS ADMINISTRATION OF GLUCOSE-SALINE SOLUTIONS AND BLOOD.

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DURING the past decade physicians have appreciated the benefits obtained from the intravenous injection of isotonic solutions by the continuous drip method. Recently, Marriott and Kekwick,[1] working at the Middlesex Hospital, London, have emphasized the advantages of massive transfusion of citrated blood, and they have introduced suitable modifications in the standard continuous drip technique. The purpose of the present paper is to describe a simple and inexpensive apparatus for the continuous administration of isotonic solutions and to record some minor alterations which have been made in Marriott and Kekwick's method for continuous drip blood transfusion. The indications for the administration of glucose-saline and other similar solutions are omitted, as they have been considered elsewhere.[2] The place of massive blood transfusions in modern medicine has been fully described by Marriott and Kekwick,[1][3] Gordon Taylor,[4] and others, and the author[5] has recently discussed some of the biochemical changes which occur in severe exsanguination.

The Continuous Intravenous Administration of Isotonic Solutions.

Preparation of Solutions.

The solutions suitable for use include normal saline with glucose in strengths of 2%, 5% or 10%, Hartmann's solution and Ringer's solution. The following procedure, based on the teaching of Cooper and Haldane,[6] has been employed in preparing the sterile solutions. Tap-water is clarified by filtration through a Jeffrey filter candle. It is then distilled in an all-glass still fitted with a Young's glass fractionating tube containing five baffles which prevent toxic substances from passing over into the distillate. The isotonic solution is prepared by adding the required amount of chemically pure sodium chloride and glucose in powdered form. This solution is buffered with di-sodium hydrogen phosphate to give a pH value of 7·0. When purified dextrose (glucose), specially prepared for intravenous work and corresponding to the British Pharmacopœia standard, 1932, is used in conjunction with the specially distilled water, it is found that approximately 1·08 grammes of the buffer are required for 600 cubic centimetres (one pint) of a 5% glucose solution. A simple polychrome indicator is suitable for determining the correct pH. Finally, sterilization is carried out by boiling for twenty minutes in an Erlenmeyer flask, the mouth of which is then plugged with sterile cotton wool. Solutions should be stored in a cool place and used within forty-eight hours of preparation.

Although this procedure may appear to be somewhat elaborate, in practice it is simple to carry out and contributes greatly to the success of the administration. Most authorities agree that toxic reactions in the patient, such as pyrexia, rigors and collapse, can be reduced to a minimum by exercising great care in the preparation of these solutions and in the cleansing of the apparatus.

Apparatus.

A diagrammatic representation of the apparatus is given in Figure I. A pickle bottle of two pint (1,200 cubic centimetre) capacity is graduated in ounces by means of ink markings on a strip of adhesive strapping. The bottle is filled by means of a tube and funnel, *A*, after the cork has been temporarily loosened to allow the displaced air to escape. When not in use, the funnel is loosely covered by sterile gauze and allowed to hang in an inverted position. The fluid is conveyed to a dropper, *B*, by means of *C*, which consists of glass tubing (size six millimetres or a quarter of an inch) and rubber pressure tubing (size ten by five millimetres).[1] The dropper *B* consists of a glass funnel of 60 cubic centimetres capacity, such as is used in a "male" glass syringe. This is fitted with a rubber cork, which is pierced by a short glass tube drawn to a point. The lower end of this dropper is connected by four feet of rubber tubing to a glass cannula. Several cannulæ of various sizes should be available, and the biggest that will fit into the vein should be used. A short straight cannula with a gradually tapering point and short bevel has been found to be quite satisfactory (Figure II, *A*). It is simple to insert, fits tightly

[1] These types of glass and rubber tubing are of standard size and are used in all the various procedures described in this paper.

into the vein and does not promote clotting. In addition, it can be easily made from standard glass tubing. A screw clip, *D*, is inserted above the dropper to regulate the flow.

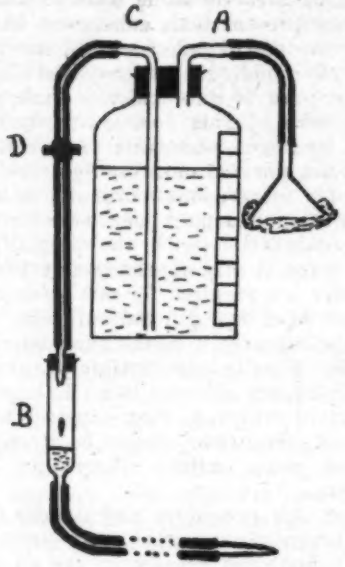

FIGURE I.
Diagram showing the apparatus for the continuous administration of isotonic solutions. *A*: filling tube and funnel; *B*: dropper; *C*: delivery tube; *D*: screw clip to regulate the flow.

Cleansing the Apparatus.

The whole apparatus is first washed out thoroughly in fresh running tap-water under pressure and finally with freshly distilled water. It is then assembled, covered with gauze, padded liberally in cotton wool to prevent breakages, and finally wrapped in a calico cover secured by safety pins. It is sterilized by steam in an autoclave at a pressure of fifteen pounds for twenty minutes (three minutes in dry steam, three minutes in wet steam, and then fourteen minutes in dry steam).

Procedure.

The bottle is placed on a suitable stand four feet above the level of the bed and is filled by means of the funnel and tubing *A*. After removal of the cork, the funnel *B* and its connected tubing are completely filled with fluid, care being taken to remove any bubbles of air. The cork is then firmly replaced and the delivery tube is allowed to hang in a vertical position. As the level of the fluid in *B* falls, air and then fluid will be sucked over from the reservoir. Fluid begins to flow into *B* before the last of the fluid has run out, and thus a suitable air lock is provided. The screw clip is then closed and the apparatus is ready for use.

It is important to have the apparatus filled before exposing the vein. This will avoid prolonged exposure of the patient and the vein will not be manipulated until immediately prior to the insertion of the cannula.

The selection of a suitable vein is important. If the veins in front of the elbow joint are used, a splint will be necessary to prevent movement, and this is uncomfortable for the patient. The most satisfactory veins are those of the forearm and the internal saphenous vein of the leg, where it passes over the anterior half of the medial malleolus to course up the medial surface of the tibia. In an adult the internal saphenous vein can usually be seen or palpated as a thick fibrous cord resembling a tendon. The vein is first mapped out by a superficial scratch in the skin, and then some local anæsthetic, such as "Novocain", 2%, is injected into the overlying skin and subcutaneous tissues. The vein is exposed by an incision about 1·25 centimetres (half an inch) long. A longitudinal incision is made if the vein is definitely located; otherwise a transverse incision is preferable, as it explores a wider field. A small retractor (Figure II, *B*) has been designed to give a maximum exposure without the aid of an assistant. The vein is lifted from its bed by means of sinus or dissecting forceps and a loop of fine catgut (size 00) is passed under it by means of a Mayo's half-circle, round-bodied,

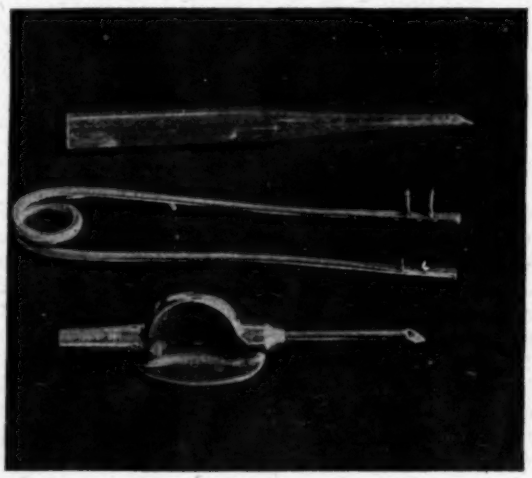

FIGURE II.
Some instruments used in massive blood transfusion. *A*: glass cannula which is tied into the vein; *B*: metal retractor for exposing the vein; *C*: needle for taking blood from the donor, showing large bore and special holding and stabilizing plates.

trocar-pointed needle (size 6), held by a needle-holder or Spencer-Wells forceps. This is superior to the average aneurysm needle, which is too big. The catgut is then cut at the needle, leaving two supporting lengths, which are held by Spencer-Wells forceps. The vein is opened with a pair of fine scissors, and after release of the screw clip to allow the fluid to flow slowly, the cannula is introduced into the vein in a proximal direction until it engages tightly in the lumen. It is held in position by tying the proximal catgut loop, the distal loop also being tied below the incision in the vein to prevent hæmorrhage.

The wound is covered with a small piece of cyanide gauze, about one inch square, and the cannula and a short length of tubing are firmly attached to the limb by means of numerous transverse strips of adhesive strapping. During this procedure the screw clip is fully released and the cannula is fixed in the position that will allow of a maximum flow through the dropper, the tension applied by the transverse strips of adhesive strapping being most important. The limb is finally covered with a liberal quantity of cotton wool and a firm bandage. If the leg is being used, it is advisable to prevent excessive movement by tying a bandage around the ankle by means of a clove hitch and attaching the other end to the bottom corner of the bed. The other leg can be similarly controlled and splinting is unnecessary. The screw clip is then adjusted to allow the fluid to run in at a rate of 40 to 60 drops per minute, and the fine point of the dropper should be of such a size that it will deliver from 120 to 180 cubic centimetres (four to six ounces) per hour. The administration may be continued for one to seven days, depending on the needs of the patient. The cannula should be transferred to another site if the flow ceases owing to clotting in the vein or if a red streak appears in the limb over the course of the vein. No attempt is made to warm the fluid in the reservoir.

Massive Transfusion of Blood by the Continuous Drip Method.

Typing the Blood.

It should be emphasized that the greatest care must be exercised in typing the blood. This question has been fully discussed by Marriott and Kekwick[1] and some important observations on technique are recorded by Gardner in the present issue of this journal (page 839).

Briefly, it may be stated that the recipient's blood must be typed with group sera and all the donors must be of the same group as the recipient. Group IV donors cannot be regarded as "universal donors" when large volumes of blood are being administered. They can give blood to a Group IV recipient only and not to those of Group I, II or III. If this error is made, the serum provided by the Group IV donors will soon reach a sufficient concentration in the blood stream to agglutinate the corpuscles of the recipient. Moreover, the serum of "universal donors" (Group IV) will agglutinate the corpuscles of any of the other groups if it is allowed to mix with them in the reservoir.

In addition, direct typing should be carried out, the serum of the recipient being tested against the cells of each donor and *vice versa*. Any disregard of these essential precautions greatly endangers the life of the patient.

Collecting the Blood.

Apparatus.—A flask of 1,500 cubic centimetre (two and a half pint) capacity (Figure III) is fitted with a rubber cork pierced by three glass tubes, *A*, *B* and *C*. The tube *A* is attached by six inches of rubber tubing to a large-bored needle, which is specially designed to enable easy manipulation when the vein is being pierced, and comfortable fixation once the vein is entered (Figure II, *C*). It has a very sharp point with a short bevel, and the whole shaft is constructed from a single piece of metal (number 14 British wire gauge). The tube *B* is connected by two feet of rubber tubing to a reversed Higginson's syringe, which is used to create a negative pressure in the reservoir. The tube *C*, which is closed by means of a short length of covered rubber tubing and screw clip, is used to empty the flask after the blood has been collected (*vide infra*).

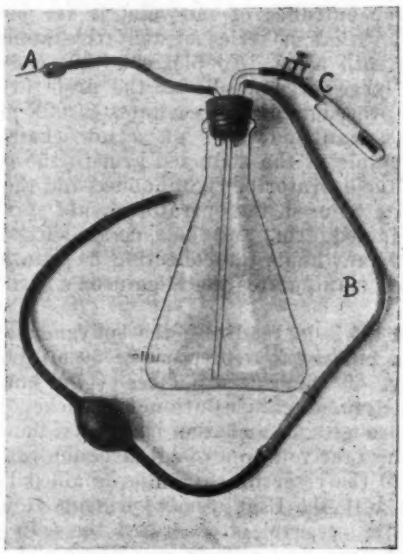

FIGURE III.

Blood-collecting apparatus. *A*: collecting needle and tube; *B*: reversed Higginson's syringe; *C*: delivery tube to fill main reservoir (see Figure IV).

Procedure.—The anterior aspect of both elbows is first inspected to determine which has the more prominent veins. Consideration should also be paid to the occupation of the donor, as his arm may be slightly tender for several days after the venesection. The donor lies on a bed or table with his arm abducted to a right angle and resting on a narrow table or arm rest. A sphygmomanometer is then firmly wrapped around the arm as far from the elbow as possible. All clothing, except perhaps a short-sleeved singlet, should be removed from the arm, as a bulky mass of rolled-up shirt sleeve is a great hindrance. The skin is sterilized with a colourless antiseptic, such as an acetone, cyllin, methylated spirit mixture, and the sphygmomanometer is pumped up to a pressure of 60 millimetres of mercury. With a sharp scalpel a longitudinal scratch, about two centimetres long, is made in the skin to map out the course of the vein which is to be pierced.

The sphygmomanometer is then deflated and the skin at the centre of the scratch is infiltrated with about 0·1 cubic centimetre of local anæsthetic solution. A longitudinal incision, 5·0 millimetres in length, is made through the skin with a fine scalpel, final exposure of the anterior wall of the vein being carried out by blunt dissection with fine curved Spencer-Wells forceps. The scratch which has been previously made serves as a useful landmark for this incision, for it will be found that the local anæsthetic may partly obscure the exact location of the vein. There has been great controversy as to the necessity of this minute skin incision. An incision five millimetres long (which no more than accommodates the shaft of the needle), with easy entrance of the vein, is far better for the donor than a series of tentative stabs—probably in both arms. To pierce a vein consistently with a large-bored needle at the first thrust is a difficult procedure and necessitates careful planning.

An assistant now sits on a low chair on the opposite side of the abducted arm to the operator. Should the operator be right-handed and the donor's right arm be used, the operator should stand below the abducted arm, and *vice versa* with the left. The assistant holds the collecting flask in his right hand and manipulates the Higginson's syringe with his left.

When all is in readiness the sphygmomanometer is again inflated to a pressure of 60 millimetres of mercury, 60 cubic centimetres (two ounces) of 3·8% sodium citrate solution are sucked into the flask through *A*, and the needle is immediately thrust into the vein in a distal direction. Blood will flow into the reservoir, and this is aided by gentle suction with the Higginson's syringe. If too great a negative pressure is generated the vein will collapse and the flow will cease. The blood is mixed with the citrate by gently shaking the flask. By this method about 600 cubic centimetres (one pint) of blood can be obtained in ten minutes and there is no danger of bacterial contamination.

Administration of Blood.

Apparatus.—The same principles are employed as in the continuous intravenous saline technique, but certain alterations are necessary in order to prevent the corpuscles from sedimenting and so blocking the tubing. Every precaution must be taken to avoid bacterial contamination of the blood in the reservoir. Some modifications have been made in the original technique of Marriott and Kekwick, and these appear to warrant description.

The reservoir (Figures IV and V) consists of a flask of three litre (five pint) capacity, supported by a metal ring which is attached to a wooden pole. This pole is fastened by cord to the post of the bed and may be hinged at the middle to facilitate transport. A rubber cork is secured tightly in the mouth of the flask with strips of adhesive strapping. This cork is pierced by three glass tubes, *A*, *B* and *C*. The tube *A*, which allows free entry of air into the interior of the flask, is loosely packed with cotton wool to prevent the access of bacteria. The tube *C* is attached by a flexible rubber connexion to a length of glass tubing held in position at its upper end by adhesive plaster. This tube is used to fill the reservoir (Figure IV) and later, when the apparatus is in use, it is connected to a bacterial filter and an oxygen cylinder (Figure V). The filter consists of a length of glass tubing lightly packed with cotton wool. It is preferable, but not essential, to have a pressure gauge and reducing valve attached to the oxygen cylinder. The tube *B* is connected by 23 centimetres (nine inches) of rubber tubing to a dropper, *D*, which is similar to that used in the saline apparatus. The dropper is connected by four feet of rubber tubing to a cannula similar to that used in the saline apparatus. A screw clip is inserted above the dropper to control the flow of blood. No provision is made for warming the blood in the reservoir.

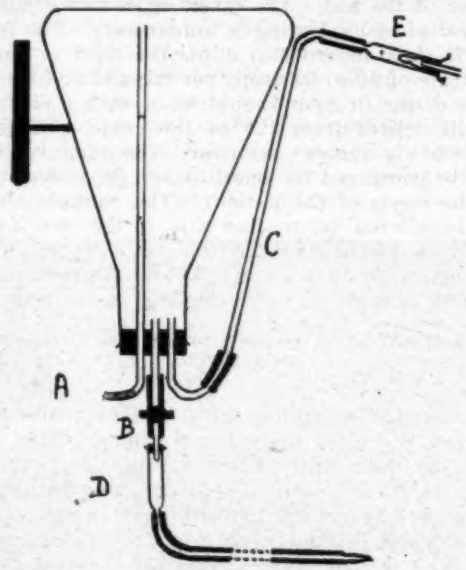

FIGURE IV.
Diagram of apparatus for continuous blood transfusion. *A*: air communication tube with wool filter; *B*: delivery tube with screw clip; *C*: filling and oxygen delivery tube; *D*: dropper; *E*: blood filter used when filling reservoir.

Sterilization of the Apparatus.—The apparatus is fully assembled after thorough cleansing (see saline apparatus) and it is wrapped in gauze, packed in a liberal quantity of cotton wool and finally enclosed in a sheet. Care should be taken to avoid kinking of the rubber tubing. The bundle is then sterilized, as with the saline apparatus.

Filling the Reservoir.—I am indebted to Dr. John McLean and Mr. J. Sutherland, of the Baker Institute, Melbourne, for generously permitting me to describe the principles of their technique for filling the main reservoir from the blood-collecting flask. The reservoir is filled from the collecting flask by again reversing the Higginson's syringe in order to produce a positive pressure in the col-

lecting flask and thus expel the blood through the delivery tube *C* (Figure III), which is connected to the receiving tube *C* (Figure IV) of the main reservoir. In order to filter the blood, a filter, *E* (Figure IV), is interposed between the two reservoirs. It consists of a sheet of fine gauze (first quality) suspended in a funnel fitted with a cork and glass tube, as in the dropper *D* (Figure IV). Before use the connexions of this filter are protected from bacterial contamination by covering them with cotton wool held in position by binding it with silk thread. Over each cover is placed a small stout glass test tube, and the whole filter is autoclaved with the remainder of the apparatus. These test tube covers are removed immediately prior to using the filter (see *C* in Figure IV).

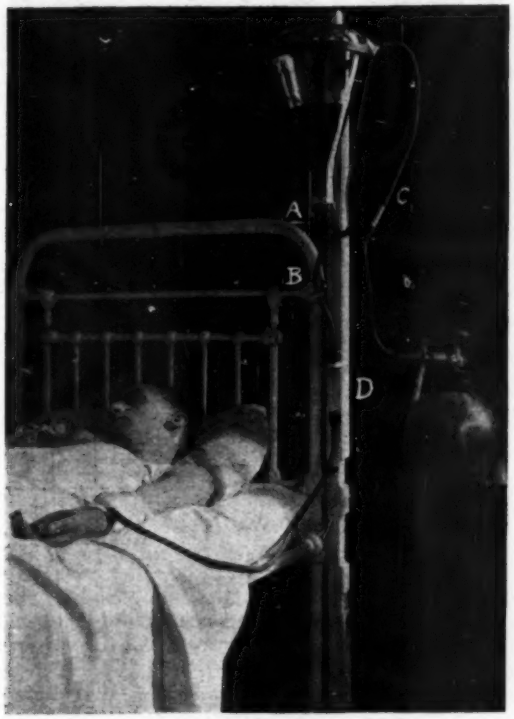

FIGURE V.

Continuous drip blood transfusion. *A*: air communication tube packed with wool; *B*: delivery tube with screw clip; *C*: oxygen delivery tube; *D*: dropper; *E*: oxygen filter.

An alternative method of filling the reservoir, which is simple, but more prone to allow bacterial contamination, consists of connecting a funnel and rubber tube to the receiving tube *C* (Figure IV) and allowing the blood to run in by gravity as in the continuous saline technique (Figure I). A piece of fine gauze is placed in the funnel to filter the blood.

Technique of Administration.—Once the apparatus is filled the oxygen cylinder is connected to the tube *C* (Figure V) and oxygen is allowed to flow in slowly at the rate of 30 to 50 bubbles per minute. The vein is then exposed and the cannula inserted as with the continuous intravenous saline technique. The blood is allowed to flow into the vein at a rate of 30 to 60 drops per minute. Progressive readings of the percentage of hæmoglobin are the best single index of the volume of blood which is required.[5] Blood is usually obtained from two donors every twelve hours and immediately placed in the reservoir. The patient will thus receive 2,400 to 3,600 cubic centimetres (four to six pints) of citrated blood in twenty-four hours, and this is the average total volume which is given in moderately severe exsanguination. Marriott and Kekwick,[1][3] have given valuable advice as to the best method of controlling the donors. It is essential that the relatives of the patient should supply all the donors, in order to prevent an excessive call upon the voluntary donor services, such as that organized by the Red Cross Society.

Summary.

1. The infusion of isotonic solutions by the continuous drip method is discussed, with special reference to the preparation of the solution, the construction, cleansing and sterilization of the apparatus, and the technique of administration.

2. Some modifications are recorded in the apparatus first described by Marriott and Kekwick for the massive transfusion of blood by the continuous drip method.

3. Stress is laid upon the necessity for careful typing of the blood, and special mention is made of the fact that donors of Group IV (Moss) cannot be regarded as "universal" donors.

4. Some modifications in the standard method for obtaining blood from a donor are described.

Acknowledgements.

I wish to thank Dr. Charles Kellaway, Director of the Walter and Eliza Hall Institute, for his help and encouragement with this work, and the honorary medical and surgical staffs of the Royal Melbourne Hospital and the Children's Hospital, Melbourne, for generously allowing me access to their cases. Dr. Hilda J. Gardner, bacteriologist and serologist of the Royal Melbourne Hospital, has given valuable advice, especially in the typing of the blood; many of the modifications in the technique were first suggested by members of the resident medical staffs of the hospitals.

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(3) H. L. Marriott and A. Kekwick: "*Proceedings of the Royal Society of Medicine*, Volume XXIX, 1936, page 337.
(4) G. Gordon-Taylor: *The Lancet*, Volume II, 1935, page 811.
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PLASTIC SURGERY TO THE FACE FOR DEFORMITY AND CONTRACTURES AFTER NITRIC ACID BURNS.[1]

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PLASTIC surgery for deformities of the face was placed upon a modern footing during and after the World War (1914-1918), when numerous patients presented themselves for treatment, suffering from the ghastly after-effects of various wounds and burns from high-explosive shell. Special repair centres were established in England and the other

FIGURE I.

belligerent countries, staffed by surgeons skilled in this class of work, and rapid strides were made in the achievement of worthwhile results. This type

[1] Based on a case shown at a meeting of the New South Wales Branch of the British Medical Association on June 4, 1936.

FIGURE II.

of surgery requires tedious and painstaking efforts to achieve success and calls for the closest cooperation between patient and surgeon. Lengthy periods in hospital are needed, with recuperative intervals

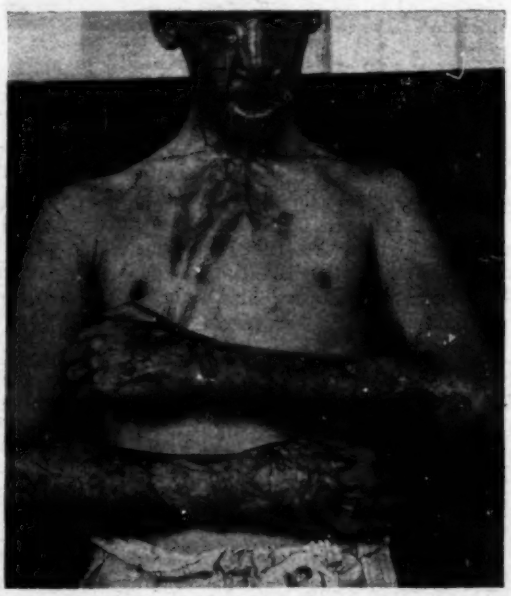

FIGURE III.

interspersed. The expense is considerable and can rarely be afforded by the individual.

Since the War there has still been quite a call for the benefits of plastic surgery, to alleviate deformity following trauma from machinery and automobile accidents, to correct the contractures following severe burns, usually from petroleum products, and to repair the ravages of malignant disease, after its extirpation; so that, even should

FIGURE IV.

the League of Nations ever achieve its ideal and wars cease for all time, plastic surgery need never become a lost art. Furthermore, there will always be the cosmetic disfigurements associated with the various degrees of congenital abnormalities of the nose, ears, lips, palate *et cetera*, which are very real disabilities in the minds of their possessors and are often productive of handicapping inferiority psychoses. Man is a gregarious animal and will always be extremely self-conscious about his facial contour and appearance, any abnormality of which places him at a disadvantage in competition with his fellows.

The different types of operations advocated and methods of skin grafting available to correct these deformities are well known and are more or less standardized in text-books on the subject, and need no further detailed description here. But the following case is reported, with photographs, to illustrate the application of several of these different techniques to the various regions affected.

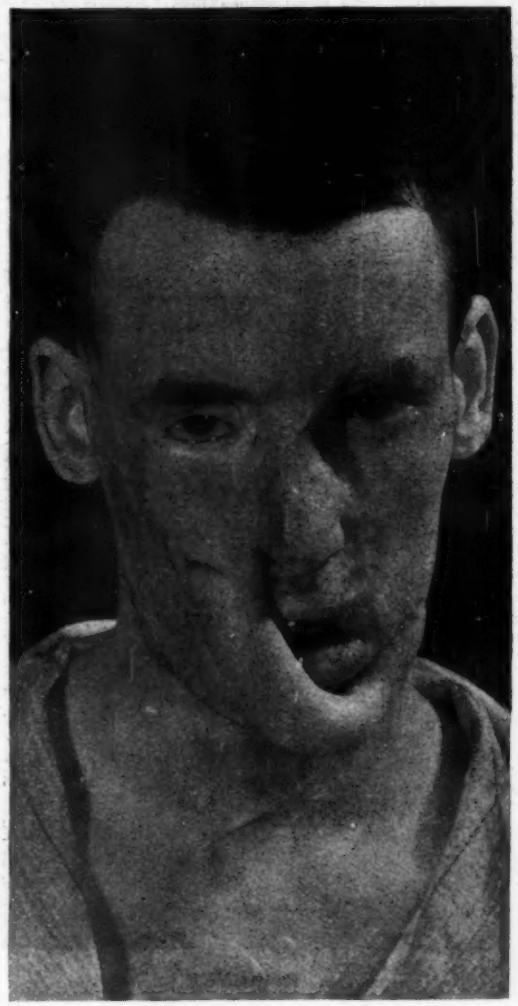

FIGURE V.

Report of Case.

In August, 1934, the patient, a male, aged eighteen years, was carrying a jar of nitric acid when he tripped and fell into the acid as it spilt. He received severe third degree chemical burns of the whole face, neck, sternal region, forearms, hands, left knee, right ankle and foot. By some miracle his eyes escaped, although the lids were badly burnt. He was taken at once to hospital, where, after weeks of difficult treatment with tannic acid, saline baths and boro-glyceride pads, the sloughs finally separated and the lesions slowly healed by scar tissue. The repair process was accelerated on the right side of the face by several Thiersch grafts. The fact that the patient did not die and that healing was finally obtained speaks volumes for the extreme care and excellence of this initial period of surgical attention and nursing.

When seen in January, 1935, the burnt areas presented the appearance shown in Figures I, II and III. The frightful disfigurement and facial deformity are at once obvious. Little wonder that he felt a social outcast. Special attention is directed to the severe ectropion of the right lower eyelid, with the downward displacement and fixation of the inner canthus and the right upper lid. There is also a well-marked fixation and ectropion of the left upper eyelid, not discernible from the photographs. Neither eye could be closed and he had a well-marked conjunctivitis, with epiphora, of both eyes. The right *ala nasi* was destroyed and the columella was attached to the upper lip. The extensive ectropion of the lower lip prevented his closing his mouth; and his eating and drinking were greatly interfered with. The thick corrugated bands of keloid

FIGURE VI.

down the front of his neck almost obliterated his chin and produced a frog-neck. His head could not be extended any further than is shown in Figure II. His larynx and trachea were compressed, and he suffered from a definite respiratory embarrassment, with oxygen lack, and some degree of cyanosis. It is suggested that this had something to do with the excessive hypertrophy of the keloid tissue at all the burnt areas, which became noticeably paler and began to subside almost immediately after the first operation, at which this impediment to his gaseous exchanges was removed. The affected areas on his forearms and hands, seen in Figure III, extended round on the volar surfaces, although the palms of the hands were spared. Extension of the right elbow was limited at about 30° from full extension by a web, and the movements at both wrists were markedly restricted. A similar area of healed keloid existed on the anterior aspect of his left knee, whilst the tissues in front of the right ankle and on the dorsum of his right foot were still ulcerated. Healing occurred later in hospital with the use of ambrein. These keloid areas on his limbs gradually became softer and less exuberant. At first, a "Z" plastic operation was contemplated as being necessary to correct the webbing in front of the right elbow; but the skin here gradually stretched and a full range of movement was later obtainable. In August, 1935, a course of superficial X ray therapy was given to the forearms and hands, which improved them still further, and full use of both wrists and hands resulted. These areas really gave very little cause for trouble and need no more comment here.

Plastic operations were commenced on January 31, 1935. In order to improve his air entry and assist his mastication and deglutition, at the first operation the dense irregular area and bands of scar tissue were excised from

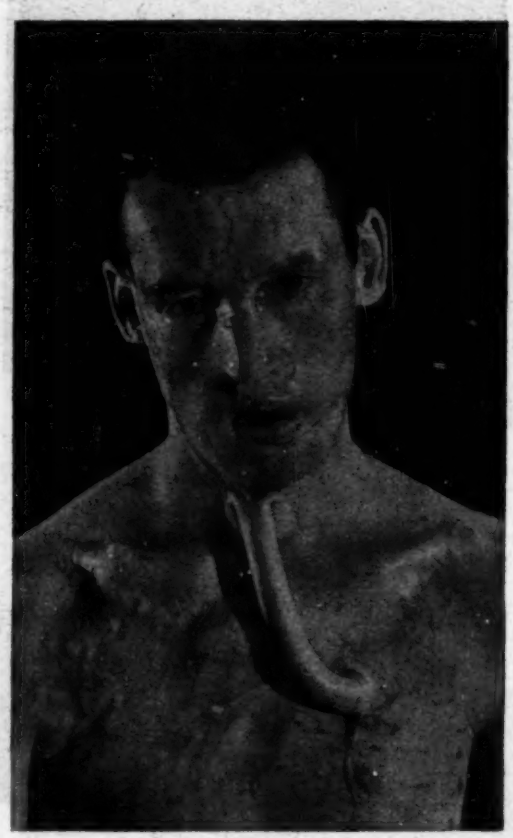

FIGURE VII.

the front of his neck and sternum down to the infrahyoid muscle layer. This allowed reconstruction of his chin and some correction of the lower lip ectropion, and he could then close his mouth and fully extend his neck. The administration of the first anæsthetic presented many peculiar problems of its own. Local anæsthesia was out of the question, lest the remaining whole skin be damaged; intrapharyngeal insufflation of ether was not sufficient, and it was only with great difficulty that a Magill tube was finally introduced into the displaced trachea. The gap and raw area left after removal of the scar tissue was filled in by undermining large flaps of skin from each side of the neck, clavicular and acromial regions, and swinging them across the front of the neck and *manubrium sterni* as pedicle grafts. Despite some sloughing at each acromial angle, due to tension, the general result was satisfactory, as can be seen from Figure IV. After the operation the patient was extremely ill for three days.

Despite the administration of large quantities of 10% glucose in normal saline solution, he vomited frequently and developed acidosis and severe hæmaturia with oliguria and blood casts. This was regarded as an acute toxic nephritis due to the liberation of histamine or similar bodies from the keloid tissue by the operative trauma and their subsequent absorption from the raw areas. The reaction appears to have been of a massive allergic or anaphylactic nature, following a sensitivity to damaged tissue extracts produced at the time of the burning, because it lasted a few days only and did not recur after subsequent operations. Perhaps it had been maintained by the degree of carbon dioxide retention which existed prior to this operation.

FIGURE VIII.

The second operation was performed about four weeks later. The ectropion of the left upper lid was released and a new covering made for the upper lid with an Esser-Thiersch inlay graft over a Stent mould. Some of the keloid scar tissue was excised from the region of the nasion and from the left cheek and upper lip, the red margin of which was corrected. These procedures produced satisfactory results and his left eye could be closed readily, and so could his lips.

After he had had a short holiday at the seaside a start was made to renew the right side of his face and chin. At the first stage of this operation, early in April, 1935, a long Gillies tubed pedicle graft, measuring about 25·0 centimetres long by 8·0 centimetres wide, was prepared from the right pectoral region and the skin edges were approximated behind it by extensive undercutting. At the second stage, three weeks later, the lower end of the tube was transplanted onto the left side of his chin and lower jaw (see Figure IV). For the ten days following this operation his head and shoulders were encased in a plaster cast, to prevent any movements until the graft had taken. At the third stage, another three weeks later, the other end of the tube was transplanted to the right cheek region, its upper margin being used very effectively to form a new right lower eyelid and side to the nose (see Figures V and VI). At the same time, the right upper eyelid was restored to its correct position. After this operation he could close both eyes. The epiphora ceased and the conjunctivæ rapidly became normal. The peculiar and uncanny appearance of this large sausage-like tube of skin and subcutaneous fat lying across his mouth can be readily seen in Figures V and VI. At the fourth and final stage,

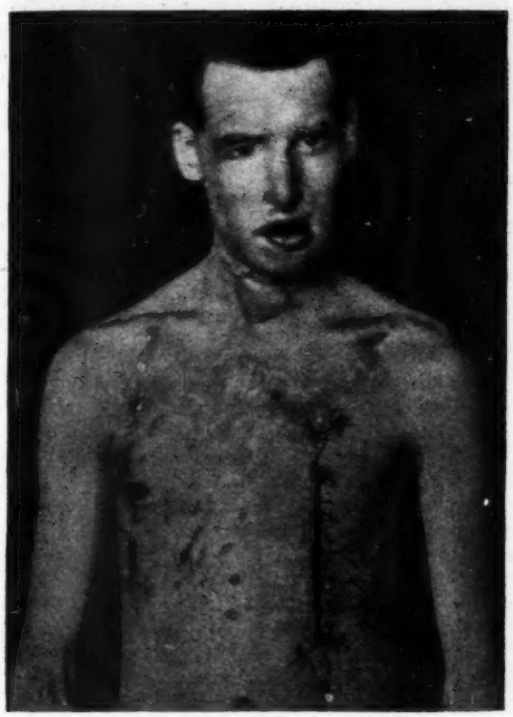

FIGURE IX.

late in June, 1935, the centre portion of this tube was opened out and used to reform the chin and right corner of his mouth, lips and *ala nasi*, as can be seen in Figure VII. The ectropion of his lower lip was thus largely corrected.

He was again given a short holiday, and late in July, 1935, another long tube graft was raised from the left pectoral region. Three weeks later the lower end was transplanted to the front of his neck (see Figure VII); three weeks later again the upper end was transplanted to recover the right side of his face between the ear and the previous graft. At the fourth and final stage the middle portion of this tube was opened out and used to reform the rest of the right side of his face and neck. Shortly afterwards, the right angle of his mouth was enlarged and the tip and columella of his nose were freed from his upper lip and reconstituted by incising transversely and suturing longitudinally. His appearance at this stage, about November, 1935, can be seen from Figures

VIII and IX, the battle-scarred chest, from which the two tube grafts had been removed, being also visible. These keloids have since subsided and lost their red appearance.

The patient was then allowed to return home for six months and to stay out in the sun and fresh air as much as possible. During this time the grafts assumed more of a natural colour and lost much of their pristine pallor. Some cutaneous sensation also appeared in them.

FIGURE X.

In May, 1936, he returned for a final inspection. Some dense fibrous bands had appeared under the graft in the right side of his neck and he complained of the large size of his lower lip, which made it catch in his line of vision. The scar in the centre of the right side of his face was also rather excessive. Consequently, in two stages, the lower lip was further inverted by excising a portion of the mucous membrane inside, near the gingival sulcus; the right angle of the mouth was enlarged further; the scar on the face was excised and the two grafts were neatly united; and the fibrous bands were removed from the neck by raising portion of the second graft and replacing it.

The final facial appearance of the patient can be seen from Figures X and XI, taken about the middle of June, 1936. The general appearance is good, except for the area underneath the lower portion of the second tube graft in the neck, which is still puckered and may need further attention, possibly by inserting a subcutaneous fat graft. Another period of six months will be allowed to elapse, however, before any more operative treatment is contemplated.

Summary.

1. The present-day position of plastic surgery is defined.

2. A case of severe deformities and contractures, with keloid formation, following nitric acid burns is presented.

3. Its management is discussed to illustrate the application of three methods of skin grafting, namely, whole thickness pedicle grafts, Gillies tubed pedicle grafts, and Esser-Thiersch inlay grafts.

4. The correction of minor disfigurements and disabilities by ordinary plastic methods is described.

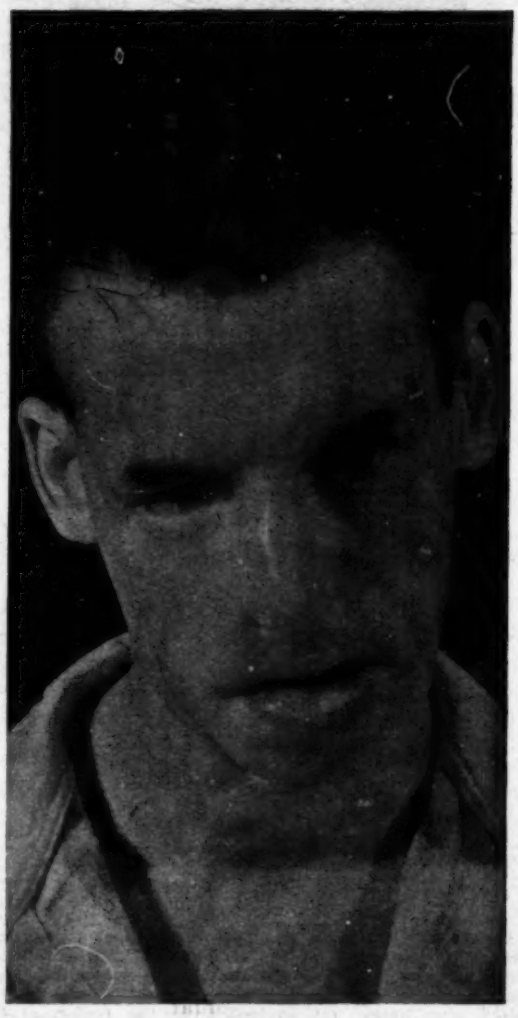

FIGURE XI.

Acknowledgements.

The helpful advice, assistance and criticisms of Professor H. R. Dew, Dr. H. P. Pickerill and Dr. John S. MacMahon and successive house surgeons

are gratefully acknowledged. The numerous skilful and tedious intratracheal administrations of the anæsthetics by Dr. W. I. T. Hotten were a tremendous help and relief from anxiety, for the blood loss during the excision of keloid was considerable. During the transference of the second tube the patient developed a form of preanæsthetic phobia and vomiting which subsequently necessitated the administration of paraldehyde and later "Avertin" *per rectum* in basal doses before he left the ward. The excellent photographs were taken by Mr. Woodward Smith in the Department of Medical Artistry of the medical school, or prepared by him from originals kindly taken in the deep X ray therapy department of the Royal Prince Alfred Hospital and in the Department of Anatomy, University of Sydney, during his absence. Finally, the cooperation of the patient himself and the nurses, left nothing to be desired, especially during the periods of frequent difficult dressings and when only liquids were allowed through a straw, to prevent movements of the lips and jaws.

THE SPECIALIST ANÆSTHETIST: HAS HE IMPROVED THE STANDARD OF ANÆSTHESIA?[1]

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WHEN I was asked to read a paper before the Section of Anæsthesia I was very much at a loss as to what subject I should choose. My experience in the art of anæsthesia is somewhat limited, and, being, as I am, the most junior member of the section, I felt that it would be a presumption on my part to choose a subject that would make it appear as though I were attempting to teach my seniors how to administer anæsthetics better. After some amount of consideration I decided to speak of the change of status of the anæsthetist and to try to arrive at some conclusion as to whether the specialist anæsthetist had justified his existence by raising the standard of anæsthesia. Some of you who are specialist anæsthetists will probably think that "existence" is a very appropriate word—and a very bare existence it is at times for him who restricts himself to anæsthesia. That is beside the point, however. What I hope to show is that, though the individual anæsthetist may have reached a much higher standard than in years past, the majority of practitioners of recent graduation have not done so. If this is the case, has the anæsthetist warranted his presence in the specialist ranks of medicine?

[1] Read at a meeting of the Section of Anæsthesia of the Victorian Branch of the British Medical Association on September 9, 1936.

The practice of anæsthesia is an art that has undergone very rapid changes in the last few years. It is not long since the tools in trade of the anæsthetist were the bottle of chloroform and the mask. Now, however, it is not uncommon to see the anæsthetist arriving at the operating theatre with far more equipment than the surgeon. This has come about through the introduction of gas anæsthetics, with bulky cylinders and machines, and through the more common use of endotracheal anæsthetics. Other changes, of course, have been the introduction and more general use of spinal and basal anæsthetics. These have, I am afraid, not only decreased the anæsthetist's equipment, but at times the frequency of his visits to the operating theatre, the surgeon preferring to do away with the expense of an anæsthetist. It is only a few years since I completed my medical course, and a considerable part of the time since then has been spent in close association with public hospitals; therefore, I have been in a position to study at first hand these changes in anæsthesia and anæsthetists. As a result of these changes anæsthesia became a rapidly expanding subject and the art a more difficult one to acquire. It followed from this that anæsthesia became a subject for the specialist, and gradually the specialist anæsthetist appeared on the medical horizon. It was during the time of my close association with public hospitals that the specialist anæsthetist came to the fore; and I intend in this paper to trace his rise to his present position and the influence he has had on the standard of anæsthesia of today, and to suggest the possible outcome of his appearance.

I shall deal first with the evolution of the specialist anæsthetist. In years gone by, when anæsthetists were first included on the honorary staffs of the public hospitals, honorary anæsthetists were general practitioners who either had a special interest in anæsthesia or who had joined the honorary staffs for the purpose of obtaining additional experience in the administration of anæsthetics. I am afraid that the second group was the more numerous. It was upon the shoulders of the former minority that fell the task of pioneering and developing any new methods of anæsthesia introduced into the country, whilst the latter majority stood by without any active interest, their only interest being in ether anæsthetics. The anæsthetists of that time, being as they were more or less busy general practitioners, had comparatively little time to devote to public hospital work, and accordingly the development of anæsthesia was slow. However, as the various improvements in anæsthetic agents and methods were introduced to this country, there emerged from among the ranks of the honorary anæsthetists persons who were prepared to devote more and more time to the study of the art and less and less to their general practices. Finally, we have arrived at the stage when a considerable number of the honorary anæsthetists of the metropolitan hospitals are specialist anæs-

thetists, devoting their whole time and energy to the subject. These individuals, having no general practices to attend, can give much more time to public hospital work than was previously possible; and we shall see presently the influence that this fact had on the standard of anæsthesia today.

So far we have considered the evolution of the specialist anæsthetist in the public hospital; but I think we might turn for a moment to the anæsthetist in private practice. In the early days of anæsthesia all doctors considered themselves capable anæsthetists, and the surgeons were willing to employ them. The anæsthetic agents in use were chloroform and ether, and the surgeons considered these ample for their purposes. In public hospitals surgeons encountered the difficulties of operating under the early, inefficient administrations of gaseous anæsthetics, and, not seeing their advantages, condemned them as a whole. They therefore were slow to admit the advantages that could come to their patients through the use of gas anæsthetics, and in their practices were content to continue with ether or chloroform administrations, given by any anæsthetist who happened to be at hand. Slowly, with the improvements in gas anæsthesia, surgeons came to realize the importance of employing it in certain cases, and they turned to the evolving specialist anæsthetist when they thought that gas was indicated. It still rested with the surgeon to decide when gas was needed. The next step forward came when some surgeons realized that their anæsthetists were much more capable of assessing the anæsthetic risk of their patients and of deciding what type of anæsthetic agent should be employed in any particular case. It was then that the anæsthetist was looked upon as a specialist and was consulted as such; and, having been consulted, was asked to administer the appropriate anæsthetic, whether gaseous or liquid. It was only then that the specialist anæsthetist was assured of sufficient support to warrant his existence. There are still many surgeons, however, who are willing to call in a specialist anæsthetist only when they consider a gaseous anæsthetic is required, but who think that any anæsthetist is good enough for their ether administrations. Furthermore, since the introduction and more general use of spinal anæsthetics, some surgeons take it upon themselves to administer the anæsthetic and supervise the anæsthesia. These surgeons, and particularly the gynæcologists among them, claim brilliant results for themselves; but on investigation it is found that, should the patient be other than an "A" risk, an anæsthetist is asked to give an inhalation anæsthetic. In other words, the surgeon is willing to accept the dual responsibility, provided there is, in his opinion, no real anæsthetic responsibility to accept. The position of the surgeon-anæsthetist is obscure in these circumstances, and we would appreciate a ruling on the subject. The coroner may yet be called upon to make a statement on this important matter.

Surgeons, needless to say, are not entirely to blame for the present state of affairs. The general practitioner who sends a patient to a surgeon expects to give the anæsthetic, and if the surgeon fails to ask him, the general practitioner will in future send his patients to a surgeon who does. The wise surgeon, in my opinion, if the general practitioner insists on attending the operation, is the one who overcomes this difficulty by suggesting that he should assist rather than give the anæsthetic. He can do less harm as a useless assistant than as a poor anæsthetist. I am afraid that, as far as private practice is concerned, the specialist anæsthetist does not in all cases receive very strong support from the surgeons upon whom he is entirely dependent for his existence. Surgeons are content to call in his assistance when they are in difficulties, but are unwilling to support him in between times. The remedy for this matter is the education of the public and the surgeons to the advantages of a competent anæsthetist. The education of the public is a difficult matter for us to undertake, and, from past experience, it appears even more difficult to educate the surgeons. Until surgeons see the error of their ways our position will continue to be unsatisfactory.

Turning once more to the public hospitals, let us consider the effects produced by the appearance of the specialist anæsthetist on the standard of anæsthesia among the resident medical officers. It must be borne in mind that these resident medical officers, on leaving the hospitals, become to a large extent the country and suburban practitioners who, particularly in the country, are today called upon to administer a considerable number of anæsthetics to patients of all grades of risk. I think that I shall be able to show that these men are now turned out into the world with a much poorer knowledge of anæsthesia than in years past, and that this is due to the presence in the public hospitals of specialist anæsthetists, anxious to advance the art of anæsthesia.

In the past, when the honorary anæsthetists of the public hospitals were in the main general practitioners with more or less busy practices to attend, and a limited amount of time to spare to hospital work, they were usually available for the honorary surgeon only when administration of an anæsthetic was likely to be particularly difficult. The honorary anæsthetists who had joined the staff for the purpose of improving their own skill in the open administration of ether, had scant knowledge of gas and endotracheal machines and their uses. I have recollections of registrars of my hospital instructing these so-called anæsthetists in the workings of the various anæsthetic machines, teaching them to intubate the larynx, and standing by whilst they attempted to asphyxiate patients with ethylene. It is hardly necessary to say that these gentlemen preferred to have other work to do when gas anæsthesia or endotracheal administration of an anæsthetic was required, and in their absence their work was done by the resident medical officers and registrars of the hospital. The specialist surgeons, such as the oto-rhino-laryngologists, were not as a rule pro-

vided with honorary anæsthetists, so that comparatively few of the endotracheal administrations were carried out by honorary anæsthetists.

Gradually there has appeared, as we have seen, the specialist anæsthetist who has no general practice to limit his time, but who can give possibly five or six half-days a week to public hospital work. These anæsthetists are much more regular in their attendances and are interested in all forms of anæsthesia. The open administration of ether still attracts them; but gas anæsthetics with the problems of premedication and carbon dioxide absorption technique, endotracheal administration with the evolvement of inhalation methods, and spinal, basal and intravenous anæsthetics with the arguments for and against their uses, maintain their lively interest in hospital work. The specialist surgeon now readily obtains the services of an honorary anæsthetist, with the result that the majority of endotracheal administrations are carried out by them. Even the dentists are catered for, for, with the introduction of the nasal use of gas, the honorary anæsthetist found a new field to explore. The surgeons, by branching into cerebral surgery, with its requirement of the endotracheal use of gas, and into chest surgery, with its gaseous anæsthetics under pressure, further increased the call for the skilled anæsthetist. So we find, year by year, that a much greater percentage of complicated anæsthetic administrations is required, and there are fewer and fewer simple open ether administrations.

What have been the effects of these changes on the resident medical officers of the hospitals? In years past we found the resident medical officers administering a very large number of anæsthetics during their stay in hospital, many of them giving close on one thousand anæsthetics during their twelve months' residency. A large number of the open ether administrations for major surgery were carried out by them—indeed it was rare to find a time of day when a resident medical officer was not giving anæsthetics for one of the senior surgeons. As tonsillectomies in adults were done in most cases under anæsthesia produced by the endotracheal method, and as the nose and throat surgeons were poorly supplied with honorary anæsthetists, a large number of endotracheal administrations were carried out by the resident medical officers. Furthermore, they were taught by the laryngologists to pass endotracheal catheters, with the result that they intubated the larynx with much greater facility than did many of their seniors. Many of the gas anæsthetics were given by the registrars and senior resident medical officers, and all members of the resident staff were anxious to learn something of the use of gas. The resident medical officers, then, were interested in anæsthesia, and this interest dated back to their student days, when, during their fourth and fifth years, they were able to give very many anæsthetics. The resident medical officers as a whole left the hospital excellent administrators of ether by the open method, and in many cases, no doubt owing to the recent intensive practice, were more efficient anæsthetists than some of the honorary anæsthetists of the hospital.

Now, however, we find the resident medical officers giving comparatively few anæsthetics. The ether anæsthesia induced by them is mainly of short duration; the anæsthetics are given in the casualty and out-patient departments and for emergency surgery at night and in the week-ends. Resident medical officers look upon the short administrations as nuisances, for they interfere with the ward work. They give few anæsthetics by the endotracheal method, and are usually unskilled in the introduction of endotracheal catheters. Gas anæsthesia is an unknown art to them. They have come to look upon an anæsthetic as something difficult to give and dangerous to the patient. At the slightest hint of difficulty they prefer to leave the administration to the honorary anæsthetist. They no longer show any great interest in anæsthesia, and I think that this is largely due to the fact that instruction in anæsthesia has now been pushed into the sixth year of the course, and students have great difficulty in finding time for six administrations under supervision. We are now turning loose on the public men who, on the whole, are quite unskilled in the art of anæsthesia.

What is to become of all this? In the metropolitan area, where there are now a considerable number of specialist anæsthetists, the problem is capable of solution, the solution resting very largely with the surgeons. If they will insist on a competent anæsthetist being engaged for their operations, I am sure that it will be for the good of their patients as well as themselves. It is time that the surgeons realized the importance to all concerned of an efficiently given anæsthetic. The average general practitioner is quite capable of inducing the short anæsthesia required for the opening of boils and similar minor surgery; but he is usually hopelessly lost when it comes to an abdominal operation, and it is time he realized his limitations. This is not due to his incompetence, but to the impossibility of his obtaining sufficient practice to keep him in touch with anæsthesia.

In the country, however, the problem is a little different. Specialist anæsthetists are almost unknown, and the practitioner is called upon to give the anæsthetic; but it is the resident medical officer of today who will become the practitioner in the near future, and we have seen that this officer is poorly equipped for the work. It is my opinion that this difficulty will be overcome in the same way as it will in the metropolitan area. Surgery in the country is tending to become more and more concentrated into the towns having base hospitals. It should therefore be possible for the specialist anæsthetist to arise in these districts, as he has in the metropolitan area. General practitioners will appear with a special interest in anæsthesia, and finally full-time anæsthetists will develop.

I think that there can be no argument against the fact that the specialist anæsthetist has a greater knowledge and is a better anæsthetist than the

general practitioner; and, furthermore, I feel sure that his presence in the public hospitals very much decreases the interest of the resident medical officer in and his ability to give anæsthetics. However, I feel that this very loss of interest by the resident medical officers may result finally in anæsthesia being recognized as a specialist subject. Just as with major surgery the general practitioner has come to realize his limitations, so I hope he will realize his limitations in the field of anæsthesia. This is the age of the specialist, and the general practitioner must be prepared to bow to his advent in anæsthesia, just as he has had to bow in other branches of medicine. The resident medical officers of the public hospitals appear to be gathering the impression that anæsthesia is a specialist subject, and, in my opinion, we are justified in fostering this impression. They are taught a certain amount about numerous other specialties, not with the idea that they should leave hospital and become specialists in all subjects, but that they should have sufficient knowledge to know their own limitations and when to refer their cases to specialists. So, I trust, it will be with anæsthesia, that the practitioner will feel that the administration of an anæsthetic for anything but a trivial operation is for the specialist.

In conclusion I would say that the introduction into medicine of the specialist anæsthetist has lowered, temporarily, the standard of anæsthesia among the resident medical officers of the public hospitals and other recent graduates; but that, as a result of this very lowering, the specialist anæsthetist will come to be recognized as a necessity of modern surgery.

Reports of Cases.

ACUTE INTESTINAL OBSTRUCTION FOLLOWED BY PARALYTIC ILEUS, TREATED BY THE INTRAVENOUS ADMINISTRATION OF PITUITRIN.

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RECENT discussions on the subject of organic and paralytic ileus render the following case of some topical interest. As a result of a plea by F. F. Rundle[1] in England for the use of the intravenous administration of pituitrin in functional paralytic ileus, this measure was adopted with gratifying, though ultimately abortive, results.

The patient was a male, aged fifty-nine years, a drover of rugged constitution, whose only previous memorable illness was an attack of "overflowing gall". This had manifested itself by pain "somewhere" in the right half of the abdomen, and had subsided apparently with expectant treatment.

The patient was seen at 5 p.m. on April 25, 1936, complaining of pain below the umbilicus. This pain was of thirty hours' duration, of gradual onset and increasing severity, and was of a waxing and waning type. It commenced in the mid-line, or sometimes in the right iliac fossa, and radiated to the left iliac fossa. He had vomited twice, twelve and two hours previously, the vomitus being small and green. The bowels had been open twice in the last twenty-four hours, the motions being small. He had not eaten since the pain began, but was taking fluids.

The patient stated that he had been in perfect health and had never suffered from diarrhœa or constipation or indigestion; but he admitted to being subject to marked flatulence.

On examination the man was sweating, anxious and obviously ill. The temperature was 35·5° C. (96° F.), the pulse rate was 80 and respiration rate 24 per minute. The tongue was moist and coated. The abdomen was moderately distended and very rigid without being board-like. The left rectus muscle was more rigid than the right, and tenderness was pronounced in the left iliac fossa. The percussion note was tympanitic, with impairment over the left iliac fossa and in each flank. Moving dulness was detected in the flanks. A tentative diagnosis of perisigmoiditis with probable ruptured diverticulum was made.

When seen after admission to hospital the patient had vomited and had collapsed. The vomitus was fairly copious and was regarded as jejunal. It had been "effortless". Later, with improvement in the general condition, rectal examination revealed no abnormality and a turpentine enema was returned unchanged. Another vomit was copious and brown. Numerous borborygmi were heard in the abdomen on auscultation. The systolic blood pressure at this juncture was 130 and the diastolic pressure 86 millimetres of mercury. The general condition had improved.

Laparotomy was decided upon, with a diagnosis of acute intestinal obstruction, and spinal anæsthesia was selected, subject to a consultant's approval. Dr. P. F. Hyndes, of Collarenebri, was asked to see the patient and to assist at the operation.

Twelve hours later (and thereby hangs another story, of a broken rear axle) the consultant was shown some fæculent vomitus; he agreed that the obstruction was probably due to diverticulitis or a carcinoma of the sigmoid, and considered that spinal anæsthesia was indicated.

A dose of 0·13 gramme (two grains) of "Novocain" was injected in 1·5 cubic centimetres of cerebro-spinal fluid, after premedication with 0·015 gramme (one-quarter of a grain) of morphine and 0·0004 gramme (one one-hundred-and-fiftieth of a grain) of scopolamine. Ephedrine in a dose of 0·03 gramme was given four times during the operation.

Through a left paramedian incision the sigmoid was found to be normal and collapsed. The transverse colon was collapsed. The caecum was distended. Clear fluid was present in the peritoneal cavity in moderate quantity.

The patient's condition was poor after this exploration, which was not easy, owing to incomplete relaxation of the abdominal musculature; so caecostomy was projected and the incision closed. The condition improved.

Through McBurney's incision, extended upwards, some adhesions of varying density were found in the region of the hepatic flexure. These were severed and, as their extent and nature were still undetermined, colostomy was performed forthwith.

Proctoclysis, the intravenous administration of saline and glucose solution, the subcutaneous injection of pituitrin, and other customary measures were proceeded with. The patient felt well and took fluids copiously by the mouth. The colostomy drained well and a hopeful prognosis was entertained. In fifteen hours, however, the patient again presented the picture of ileus, and was seen to be gravely ill. In contradistinction to the pre-operative picture, there was now no pain, the abdomen was silent, enemata were retained, distension was alarming, and vomits were very small.

Pituitrin, eserine and strychnine were exhibited. A turpentine enema reached the colostomy and was retained. Brine was administered through the colostomy. These measures were without result. Pituitrin in a dose of 0·75 cubic centimetre was injected at the rate of 0·1 cubic centimetre per ten seconds into the basilic vein. In

twenty seconds the patient became restless and slightly more collapsed. In thirty seconds flatus was passed through both rectum and colostomy, wind was produced through the mouth, and borborygmi were heard in the abdomen. The patient appeared improved after this injection and continued to pass flatus for some two hours. Thereafter he gradually deteriorated, was supported by "Coramine" for a time, and died at 10.30 a.m. on April 28.

A *post mortem* examination was made of the abdominal cavity only. There was no free fluid in the peritoneal cavity, and there was no evidence of peritonitis. The whole alimentary canal was very dilated from the stomach and duodenum to the pelvic colon. No organic obstruction was found in any part of the gut. The great omentum was folded upwards and to the right, and was involved, along with the proximal part of the transverse colon, in a mass of moderately dense adhesions around a small fibrotic gall-bladder. There were no gall-stones. The biliary tract was otherwise normal. Other organs showed changes due to toxæmia.

Comment.

The subject of ileus is a vexed one. Victor Bonney[2] recently appealed for recognition of the distinction between "functional obstruction", "inflammatory ileus" and *ileus duplex*. The consensus of opinion would seem to indicate that in non-inflammatory paralytic ileus surgery of any sort is contraindicated. *Bacillus welchii* antiserum is generally recommended, as are pituitrin, prostigmin, eserine, brine enemata and spinal anæsthesia.

Trinca[3] advises ultra-conservatism in withholding all active therapy except saline administration by all routes, and morphine in small doses. Bailey and Love[4] recommend medical treatment, culminating in spinal anæsthesia, when, if necessary, jejunostomy should be performed. The opinion has been expressed that the bowel, sorely stricken after operative trauma or by intense toxæmia, should be rested. And the opposite opinion likewise, that expectant attitudes resolve themselves into a passive contemplation of the patient's dissolution, so that the bowel should be "whipped" into action.

F. F. Rundle[1] advised recently, apparently with the latter end in view, the administration intravenously of 0·5 to 1·0 cubic centimetre of pituitrin at the rate of 0·1 cubic centimetre per five seconds.

The interest in the case here reported lies, I think, in the following points:

1. The coexistence or, more likely, the sequence of organic and paralytic obstruction.

2. The difference in the symptoms and signs between these two stages of the illness.

3. The suggestiveness of toxæmia as being the chief factor in ætiology (a view expressed by R. Wood Power[5]). In support of this theory are the absence of great operative trauma, the widespread nature of the dilatation *post mortem*, and the presence of marked toxæmia from the outset.

4. The failure of several recognized measures to produce the least response in the paralysed bowel. (It may be noted here that the patient was considered too ill to be subjected to lumbar puncture for spinal anæsthesia, especially as the first puncture had not been done without difficulty.)

5. The definite response obtained by the intravenous administration of pituitrin.

6. The question of a possibly happier outcome had this procedure been adopted at an earlier stage.

Acknowledgement.

I am indebted to Dr. P. F. Hyndes for his advice and assistance during the early stages of this case.

References.

[1] F. F. Rundle: "Intravenous Pituitrin in Post-Operative Ileus", *The British Medical Journal*, December 21, 1935, page 1208.

[2] Victor Bonney: Report of a discussion on paralytic ileus after acute appendicitis, *The British Medical Journal*, November 16, 1935, page 967.

[3] A. J. Trinca: "Some Points in the Treatment of Appendicitis", THE MEDICAL JOURNAL OF AUSTRALIA, September 7, 1935, page 308.

[4] H. Bailey and R. J. M. Love: "A Short Practice of Surgery", Volume II, page 672.

[5] R. Wood Power: "Treatment of Paralytic Ileus", *The British Medical Journal* (Correspondence), November 30, 1935, page 1070.

Reviews.

A TEXT-BOOK OF PSYCHIATRY.

IN the preface to his book, "Theory and Practice of Psychiatry", William S. Sadler justifiably remarks that "there is a dearth of practical literature dealing with the non-psychotic groups of nervous disorders", and then proceeds to fall into the error of over-compensation for a deficiency by devoting only 138 pages in a volume of 1,231 pages to the psychoses.[1]

In a book purporting to act as one of reference for the use of the general practitioner it is important to emphasize the appropriate treatment for each condition, as it is with this, having once made his diagnosis, that he is mainly concerned. In the work under review this aspect is not clearly defined and, although there is an excellent chapter on psychotherapeutics at the end, the various neuroses are dealt with from the point of view of psychopathology and symptomatology rather than of management and treatment. Apart from this there is little with which to find fault.

For the practising psychiatrist there is much of interest, and useful information is imparted on such matters as the conquest of fear, the development of the personality, child psychology and other important subjects. The sections on psychology and psychopathology are commendably complete and include references to the work of numerous authorities, with a criticism of their theories and conclusions. The author obviously endeavours to be scrupulously fair to the views of the various schools—Gestalt, behaviouristic, ergasiologic, Adlerian and others—and his remarks are always kindly and never scathing, even when he quotes Jastrow, in reference to Freudian methods, as saying "turning life into a clinic is as bad mental hygiene as it is bad taste". He himself offers a much more reasonable explanation of "infantile sexuality", dream interpretation and sexual symbolism than that given by the psychoanalysts. His suggestion that the term "home fixation" is preferable to that of "Œdipus complex" is also worthy of consideration, as it is self-explanatory and indicates an important ætiological factor.

In a volume of this size it is only to be expected that certain statements should appear with which we are not entirely in agreement. For example, assertions that the term "instinct" has dropped out of use, that memory impressions are made on the mind of the unborn child by the bodily movements of the mother, and that fairy tales are undesirable for the child, as they encourage phantasying, are, to say the least of it, highly controversial. In addition, it is somewhat disconcerting to find in a scientific publication sections devoted to "pet peeves" and "losing one's goat". Perhaps it is being hypercritical to draw attention to these things, as the greater part of the work is reliable and informative. It is so comprehensive that it contains a complete glossary of psychological terms, a comprehensive index, and such a novel feature as three pages of appropriate religious texts for the encouragement of patients, together with sections on telepathy, mediums, hypnotism and the sense of humour.

The chapter on psychotherapeutics covers such important aspects of the subject as personal counsel, suggestion, reeducation and socialization, and also discusses the various philosophies, including hedonism, Platonism and altruism. Occupational therapy and physical treatment are considered in some detail, and there is a valuable section on differential diagnosis.

[1] "Theory and Practice of Psychiatry", by W. S. Sadler, M.D.; 1936. St. Louis: The C. V. Mosby Company. Super royal 8vo, pp. 1253. Price: $10.00.

It has been indicated that a considerable portion of the work is devoted to the neuroses, and there is a tendency to complicate the study of these conditions unnecessarily by dividing them into too many groups. The classification actually comprises twenty-two different forms of psychoneurotic reaction, and includes hypochondria, phobias and inadequacy, which are symptoms rather than clinical entities. This is perhaps excusable, as the author admittedly intends to deal *in extenso* with these forms of disorder; but some pages could well have been devoted to forensic psychiatry and trauma in relation to mental states, both of which are rapidly becoming of increasing importance to medical men in general and to the psychiatrist in particular.

This is undoubtedly a book which any psychiatrist could add to his library with advantage and read with interest and appreciation of the immense amount of study and work its production must have entailed.

PAIN.

THE publication of a book dealing entirely with the subject of the relief of pain is somewhat of a novelty and should fill a certain need, since much of the therapeutic activity of doctors is directed towards the alleviation of painful sensations. Sir Farquhar Buzzard, in an introduction to Dr. Harold Balme's book on "The Relief of Pain",[1] points out that the treatment of painless disabilities arising in the course of disease has been omitted from this volume, but nevertheless the author has emphasized the prime importance of attaining the knowledge of the cause of pain before its relief is undertaken. Dr. Balme's book is a very comprehensive one. He realizes that the problem of pain from every point of view is not yet fully solved, but he gives a condensed account of the relevant anatomy and physiology and does not omit due consideration of the psychological side of the subject of sensation of pain. The chapters on the wider aspects of general and systemic pain are useful and well compressed, though perhaps the discussion of the use of morphine and the various substitutes which have been introduced might have been extended with advantage. The part of the book which is of greatest practical use is the section devoted to regional pain, and within a compass of 160 pages the author has traversed all the regions of the body and suggested the most profitable means of relieving discomfort in each case. The final section deals with the indications for physical therapy, and at the end of the book is a compilation of the most commonly used proprietary preparations employed as analgesic drugs. The book can be commended as a very useful compilation; certainly no other book seems to contain the same amount of practical suggestions in such convenient form. It is clearly written and attractively produced; and mention should also be made of the well-selected list of references to current literature which closes every chapter.

PHYSIOLOGY.

PROFESSOR H. E. ROAF, in his "Text-Book of Physiology", aims at giving to students of medicine and science "a reasonable account of physiology based on adequate experimental data, together with a logical presentation of the material".[2]

In the second edition of the book, which appeared recently, the author adheres to the general plan followed in the first edition. The subject matter is dealt with in two main groupings. In the first place the various functions of the body are dealt with from the point of view of the physical and chemical principles underlying their action. This part occupies more than half of the book. The integrative mechanisms are dealt with in the second portion. This method of approach is still somewhat unusual, although logically sound. One result of its use is that systems, for example the circulatory and respiratory systems, are not dealt with as unit mechanisms. This treatment has certain advantages. It prevents the student who is seriously reading the subject for the first time from forming a conception of the living body as a group of semi-independent mechanisms, each with its special function.

Unfortunately, the method of approach also has its disadvantages. The conception of the functions of the body being subserved by certain rather sharply differentiated groups of chemical and physical processes is no less artificial than that which regards it as a group of related but discrete "systems". This is especially the case now that the physical activities of the body have been shown in so many instances to be the result of definite chemical changes. It is hardly an exaggeration to say that the major advances of physiology of the last ten years have been in relating hitherto unexplained physiological phenomena to their underlying chemical reactions. Of this the brilliant researches on the chemical mediation of nervous impulses form an outstanding example.

Any disadvantages which a departure from the more orthodox subdivisions of the subject may introduce are more than made up for by the author's very adequate treatment of the integrative mechanisms. The section on the supra-segmental reflex activities occupies about one-fourth of the work. The phenomena of growth, reproduction and certain psychical phenomena are dealt with in a somewhat heterogeneous section at the end of the book.

AN INDEX OF TREATMENT.

THE four volumes of the Index Series are well-known and valuable contributions to medical literature. An "Index of Treatment" was first published thirty years ago and has now reached its eleventh edition, which is edited by Dr. Robert Hutchison.[1] In addition to Dr. Hutchison, who has undertaken a large part of the writing, there are ninety other contributors, all of whom are recognized authorities in their subject. Medical books, like battleships, tend to be obsolete before they are completed; but in this book we have not noted any recommendation of out-of-date methods, nor have we failed to find mention of reasonably recent work.

In the preparation of a composite work allocation of space is obviously one of the major difficulties, and this difficulty is greater when the subject is fluid and progressive and when regard must be paid to future editions. Even so, in a book written obviously for the general practitioner, and for him alone, procedure which is outside his scope and which demands the skill, technique and armamentarium of the specialist, might be omitted or curtailed to give space for more detail in some articles which seem unduly brief. "Anthrax" is dismissed in fifteen lines, but there are more than sixteen pages on "Foreign Bodies in the Throat"; on the other hand, more than a page is devoted to "Phimosis", while just over two pages can be spared to "Poliomyelitis and Polioencephalitis". Many more examples of this apparent lack of proportion could be quoted. For ninety-one writers to divide up the subject of the treatment of all medical and surgical conditions and to compress their contributions into a single satisfactory book of less than one thousand pages is an impossible task. But so well written and informing are many of the contributions that the result of their efforts is worth while and admirable.

[1] "The Relief of Pain: A Handbook of Modern Analgesia", by H. Balme, M.D., F.R.C.S., D.P.H., with an introduction by Sir E. Farquhar Buzzard, Bt.; 1936. London: J. and A. Churchill. Demy 8vo, pp. 408. Price: 12s. 6d. net.

[2] "A Text-Book of Physiology", by H. E. Roaf, M.D., D.Sc., M.R.C.S., L.R.C.P.; Second Edition; 1936. London: Edward Arnold and Company. Demy 8vo, pp. 687, with illustrations. Price: 21s. net.

[1] "An Index of Treatment", by various writers, edited by Robert Hutchison, M.D., LL.D., F.R.C.P.; Eleventh Edition, revised; 1936. Bristol: John Wright and Sons Limited; London: Simpkin Marshall Limited. Super royal 8vo, pp. 1035, with illustrations. Price: £2 2s.

The Medical Journal of Australia

SATURDAY, DECEMBER 19, 1936.

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THE ADELAIDE CONGRESS.

THE plans for the fifth session of the Australasian Medical Congress (British Medical Association), to be held at Adelaide from August 24 to 28, 1937, are well on the way towards completion.

Since the last reference was made in these pages to the forthcoming congress, it has been decided that special prominence shall be given throughout the session to tuberculosis. The plenary session, the first scientific meeting of the congress, will be devoted to the subject of tuberculosis. The first paper, to be presented by Dr. M. J. Holmes, of the Commonwealth Department of Health, will deal with the incidence of the disease in the Commonwealth. Dr. Holmes will, it is hoped, be followed by a veterinarian, who will discuss tuberculosis of man and animals. Two other speakers, yet to be chosen, will deal with broad aspects of the subject before it is thrown open for discussion by the general body of members. The executive committee has also asked each section to discuss at one of its meetings tuberculosis of some organ or system in which its members are particularly interested. In this way many aspects of an enormous and important subject will be considered and the session of congress will be given a central or special interest. This must be regarded as very satisfactory. Tuberculosis is so widespread and so far-reaching in its effects that no member of the Branches will be able to say that he can find no subject in the congress programme that holds interest for him. Moreover, the fifth session will become a worthy successor to the first four—it will be remembered that in previous sessions the prevention of disease, goitre and cancer were the chief subjects for discussion.

In previous congresses the publication of the transactions has been the cause of much worry to the executive committees. Each session is supposed to pay its own expenses, and the transactions have, particularly when the congress was small, accounted for a very large proportion of the expenditure. Congress transactions are also unsatisfactory because they are circulated only among those who attend the congress, and any paper of merit published in them is to all intents and purposes lost. Soon after the Hobart congress the suggestion was made that some scheme should be devised that would relieve the executive committee of at least the greater part of its expenditure on the publication of transactions, and also secure a larger circulation of the contributions that were worth while. Such a scheme has been drawn up and has been accepted by the executive committee in Adelaide. According to the scheme, the usual Congress Number of THE MEDICAL JOURNAL OF AUSTRALIA will be published as soon after the congress as possible. This number will contain a *précis* of every paper and the discussion, as well as an account of the inaugural meeting, the museum, the trade exhibition and so on. For some months after this the weekly issues of this journal will be enlarged and congress papers will be published. This arrangement is similar to that adopted by *The British Medical Journal* in connexion with the annual meetings of the British Medical Association. It will, of course, be necessary to adhere strictly to the congress rules governing the length of papers, and authors will be expected to have their papers clearly and carefully set out.

This arrangement will obviously give more work to everyone connected with this journal, but both the directors and the members of the staff realize that the journal is the servant of the Branches, and they believe that the new arrangement is the best that has so far been made.

The planning of a medical congress is a difficult undertaking; only those who undertake the work know how onerous it can be. Much of the difficulty arises from the inability of many members to make up their minds whether they will accept a sectional office or whether they will carry out other duties that they have been asked to undertake. Medical men are notoriously bad business men and poor correspondents; it would sometimes appear that they shelter behind this kind of reputation, if they do not even delight in perpetuating the notoriety. We would appeal to all members of the Branches to make up their minds what they intend to do about the congress next August. It is not too early to make plans to attend; it is not too early to enrol as members. Each State (except, of course, South Australia) has its honorary local secretary, who will be glad to accept applications for membership. The Honorary Local Secretaries are as follow: New South Wales, Dr. A. S. Walker; Queensland, Dr. L. W. N. Gibson; Victoria, Dr. F. Kingsley Norris; Western Australia, Dr. L. Hayward; Tasmania, Dr. J. H. B. Walch.

Current Comment.

HISTIDINE AND PEPTIC ULCER.

As was pointed out in this journal recently, the gap between the mutilating procedure of Mann and Williamson on the dog, whereby the discharges of the bile and pancreatic ducts are diverted into the lower part of the ileum, and the development of peptic ulcers in the human stomach and duodenum is a difficult bridge for the clinician's imagination to span. The point was made that ulcers develop in man in spite of a diet theoretically rich in histidine. It was also remarked that British experimentalists and gastro-enterologists had, for the most part, remained significantly silent concerning the pharmacological and therapeutic bases of the histidine treatment. However, H. C. Barry and A. W. Florey have carefully reviewed the early experiments of Aron and Weiss, besides providing some shrewd criticism of their conclusions.[1] They point out that the experiments were far too few in number and that the dogs "protected" by histidine usually died at too early a date after the operation to exclude the possibility of subsequent ulcer formation. They quote other workers who succeeded in obtaining ulcers only after a period of several months or a year. Work is quoted which indicates that drainage of the pancreatic juice alone rarely causes an ulcer, and also that ulcers following drainage of the duodenum would heal if the gastric contents were short-circuited into a lower loop of ileum. If, therefore, there should be a lack of histidine, this lack does not seem capable of causing an ulcer when the intestine is protected by the alkaline bile and pancreatic juices. Further, ulcers can be produced by procedures which cause no interference with the disposition of the alkaline digestive ferments.

Making use of a technique devised by Mathews and Dragstedt to produce what amounts to an artificial Meckel's diverticulum, Barry and Florey performed many experiments by anastomosing a pouch of the stomach with the distal end of the ileal segment, representing an artificial Meckel's diverticulum. Normal digestion was thus interfered with, but chronic peptic ulcers formed in the ileal loop immediately below the pouch anastomosis. This fact alone provides a strong argument against a lack of histidine as the cause of ulceration, since the breakdown of proteins is complete. Cats after operation were given histidine subcutaneously each day in a dosage proportionate to that used by Aron with his dogs. Only two of nine such cats presented no signs of ulceration when killed or after death from hæmorrhage or peritonitis subsequent to ulceration. There was no microscopic evidence that histidine caused any change in the mucous membrane of the stomach or intestine as claimed by Aron.

In so far as histidine is known to be indispensable for the maintenance and growth of a young organism, Barry and Florey decided that if ulceration could be induced in a young animal which was growing satisfactorily, further argument would be provided against the "histidine-deficiency" hypothesis. Young pigs were selected for this purpose and various known ulcer-producing procedures were followed out, and, as before, certain batches received histidine. Two animals almost doubled their weight during the time of formation of large chronic ulcers, and daily injections of histidine had no effect in preventing or delaying the appearance of the lesions.

The writers then proceed to discuss clinical data and are impressed by the large numbers of case reports in which histidine is stated to have aided symptomatic improvement, especially in patients with gastric ulcer of short duration. There is, they state, general agreement about relief from painful symptoms, return of appetite, and hence increase in body weight. In general, radiographic improvement has been convincing only in recent cases, and there appears to be acceleration of healing as judged

[1] *The Lancet*, September 26, 1936.

radiographically, compared with older methods of treatment. Reports as to the effect on gastric acidity have been conflicting.

Attention is drawn to the experiments of Sandweiss and Martin, wherein the effects of daily injections of distilled water were compared in corresponding series of patients with those of histidine. Twelve of the twenty patients receiving the water became symptom-free. The same authors, Sandweiss and Martin, have provided comparisons between series of patients treated by the classical alkali *régime* and by histidine injections. Almost precisely the same degree of success, three out of every four patients obtaining symptomatic relief, was achieved with each batch of selected patients. In another batch Sandweiss found the histidine-treated group improved slightly more than the diet-treated group, but 85% of the former developed recurrences of ulcer within six months.

The results demonstrate the difficulty of assessing the value of any drug used in the treatment of a spontaneously relapsing and remitting affection such as peptic ulcer. The psychological effects of any new daily injection therapy are very strong, though unconfirmed reports state that an equal but slower benefit follows the use of histidine tablets by mouth. The case for histidine is even now unproven, and Aron's experimental reasons for its employment can no longer be seriously believed.

GOUT.

W. W. HERRICK AND T. L. TYSON, of New York,[1] express the view that gout is a forgotten disease. By this they mean that it still exists, but is overlooked by clinicians. They think that the physicians of today, busy with the recognition of osteoarthritis, rheumatoid arthritis and infective arthropathies of a specific kind, do not keep watch for what may be called a chemical arthritis, which has distressed and deformed mankind for centuries, and still tortures it.

Gout is a very ancient disease. Hippocrates described it, Galen theorized about it, and the Greek and Roman satirists poked fun at those who suffered from it. Ovid, who was no ascetic, said moodily that "medicine does not know how to remove the nodous gout". Twelve hundred years ago Alexander of Tralles enjoined upon his gouty patients a regimen containing little meat and no alcohol, and treated them with colchicum. The word gout was invented in the thirteenth century by Rodulfe. The great Sydenham's description of the disease has not been bettered, and for a good reason—he suffered from gout himself. In 1797 Wollaston proved the presence of uric acid in gouty tophi; and Garrod, one hundred and fifty years later, showed that uric acid in large amount was present in the blood of gouty patients. These studies first imported a chemical colouring into the clinical picture of gout, and we do well to remember their bearing upon the problem of plumbism. Of Garrod's patients, 33% had at some time suffered from lead poisoning, and most of them had been plumbers or painters. Futcher, analysing the ætiology of 63 cases of gout, found that lead was a contributory factor in 15%.

In their private practice Herrick and Tyson discovered six cases of gout in twelve months. As their work lies in the field of internal medicine and few patients with any form of arthritis consult them, they conclude from these figures that gout cannot be called a rare disease, and that its presence may be missed by the physician who does not search for it. The composite history of the six patients reads somewhat as follows: all suffered from recurring attacks of arthritis, usually affecting some joint in the lower extremities and accompanied by tenderness and tense, red swellings; a large proportion of the sufferers gave a clear family history of gout; all of them were overweight and more than thirty-five years of age; one of the patients was an alcoholic, but the others were confirmed teetotallers; in two instances the taking of liver extract was followed immediately by an attack of acute gout. The uric acid of the blood reached the figure of 5·0 milligrammes per 100 cubic centimetres in all acute cases, a fact of diagnostic importance. At the same time it is known that serious attacks of gout occur without any significant rise in the uric acid of the blood, and that the reverse is also true. The X ray films of the acutely inflamed joints showed nothing abnormal. In all cases the diagnostic value of the blood (the uric acid figures) was reinforced by an old therapeutic test—the almost unfailing power of colchicum to alleviate or cure.

Abraham Cohen,[1] of Philadelphia, reveals himself as of a like mind with Herrick and Tyson; gout, he says, is commoner than many suppose, and thus, by reason of diagnostic errors, people suffering from it limp hopelessly about for many years. Cohen has seen and treated forty patients with gout during the past five years, and thirty-seven of them are still under his care. No less than eighteen are members of the Philadelphia police and fire departments. The basic reasons for this strange phenomenon are elusive of discovery.

What may we say of these American opinions? Perhaps this, that in Australia at any rate gout is rare. The disease is almost a curiosity in large hospitals with easy opportunities for biochemical research. By the use of such means one orthopædic surgeon has unearthed only five cases in the past eleven years. No Australian Juvenal or Martial has yet arisen to satirize the gouty. No Australian poet has written on gout, as Browning did, and we have no native Cowper to sing of the "pangs arthritic that infest the toe of libertine excess". The squire of "Tom Jones" is a man of today and tomorrow. His gout, we may hope, is a thing of yesterday.

[1] *The American Journal of the Medical Sciences*, October, 1936.

[1] *The American Journal of the Medical Sciences*, October, 1936.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

End Results of Ventro-Suspension Operations.

W. SIGWART (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1936) has investigated the end results of operations for retroversion of the uterus. After discussing the limitations of the Alexander-Adams operation, he gives in detail the technique of the Doléris operation for suspending the uterus by fixation of the round ligaments into the anterior abdominal wall. This operation was performed on 236 patients either for an uncomplicated retroversion or following operations on the tubes or after vaginal repair. A survey of these cases shows that the danger of ileus developing is practically nil; the uterus is maintained in a normal position, which causes no complications in future pregnancies; no bladder symptoms were noted and the cosmetic results have been perfect.

The Effect of Œstrin on the Pituitary.

M. S. JONES AND T. N. MACGREGOR (*The Lancet*, October 24, 1936) have made an attempt to inhibit not only the gonadotropic but also the diabetogenic principle of the anterior pituitary by giving large doses of œstrin. Ten women past the menopause were given varying amounts of œstrin ("Dimenformon"). Six received 1,500,000 mouse units in sixty days, two received 1,000,000 mouse units in forty-six days, and two received 500,000 mouse units in twenty days. In all of them the excretion of gonadotropic hormone in the urine, which had exceeded fifty mouse units per litre, was abolished. Besides inhibiting the gonadotropic hormone, the œstrin produced uterine bleeding in seven out of the ten women. It had no consistent effect on the result of the glucose tolerance test. In other words, inhibition of the gonadotropic principle of the anterior pituitary with large doses of œstrin was not accompanied by inhibition of the diabetogenic principle.

The Alexander-Adams Operation.

E. THOMÄ (*Monatsschrift für Geburtshülfe und Gynäkologie*, August, 1936) reviews her results in a series of 200 patients with mobile retroversion operated upon by the Alexander-Adams operation. She describes the technique in detail and insists that good results depend upon careful anatomical dissection of the operative area. In some cases, when doubt exists regarding the presence of adhesions, the abdomen should be opened and these adhesions, if present, should be dealt with; the displacement is then corrected by the Alexander-Adams operation. Complete success was obtained in 91% and improvement in 5·5% of the series. In eleven cases the round ligament on one side only was shortened. This is not the method of choice and is performed only when the other ligament cannot be found. Pregnancy followed in 13·5% of the cases and the labours were normal. In conclusion the author maintains that it is the operation of choice in most cases and possesses many advantages over other methods.

Gravity Drainage of Pelvic Abscess.

A. LEE MCGREGOR (*The British Journal of Surgery*, October, 1936) states that to the average practitioner rectal or vaginal drainage of abscesses in the pouch of Douglas presents itself as a simple, safe and eminently satisfactory procedure. He sets out to show that this view is not correct. He bases his remarks on ten cases of pelvic abscess drained *per rectum* or *per vaginam*. Seven cleared up rapidly and uneventfully. Three cases were followed by serious complications; the three patients died. In two of these cases, however, complications following drainage of the abscess were not the only causes contributing to the final issue. In one of the fatal cases a loop of small bowel lay in the pelvis in an abscess cavity and bathed in pus; at the same time the intestine functioned normally. There was nothing before operation to indicate the state of affairs. The author points out that only by X ray examination could the relationship of the parts have been established. The author's final conclusions are as follows: (*a*) Rectal or vaginal drainage of a pelvic abscess is a valuable therapeutic measure. (*b*) In by far the greater number of cases the operation is followed by no ill-effects and recovery is prompt. (*c*) In persons already gravely ill the procedure may be followed by cystitis, extraperitoneal cellulitis *et cetera*. This is the very type of case in which the indications for gravity drainage are the least contentious. (*d*) The two main risks are mistakes due to faulty diagnosis and injury to the small bowel. (*e*) If the diagnosis is the least in doubt, then abdominal section is necessary, followed, if indicated, by gravity drainage *per rectum* or *per vaginam*. (*f*) Extremely rarely the small bowel may herniate through the drainage opening. Should it prolapse into the vagina there is not much harm done, providing the emergency is promptly and suitably dealt with. Should the prolapse occur into the rectum, the issue is likely to be fatal.

The Results of Conservative Treatment of the Ovaries.

J. HENDRY (*The Journal of Obstetrics and Gynæcology of the British Empire*, August, 1936) discusses the result of conservative treatment of the ovaries. He concludes that healthy ovarian tissue should be saved *in situ* whenever that is possible. A mere fragment may prove effective, and conservation *in situ* is superior to any method of grafting, since the life of a graft is only about two years, as against continual activity of the fragment *in situ*. Conservative surgery of acute pelvic conditions has improved the chance of leaving at least a small portion of ovary and has diminished the number of cases in which ovarian grafting has even to be considered. When, however, the uterus is removed, the conservation of ovarian tissue is not essential and may give rise to difficulties at a later date. In these cases the function of the retained or grafted ovarian tissue is of such limited duration that it might be substituted by the administration of standardized ovarian hormones.

G. G. WARD, in the discussion that followed the reading of Hendry's paper, said that in America conservation of the ovaries in the child-bearing age was almost the universal rule among gynæcologists. It was his practice to conserve healthy ovarian tissue when he performed hysterectomy, unless the patient was at or beyond the menopause. He pointed out that it should be borne in mind that young women whose ovaries had been removed might suffer from a distressing atrophy of the vaginal mucosa as well as other menopausal symptoms.

OBSTETRICS.

The Early Diagnosis of Pregnancy.

M. A. CHARITONOW AND L. S. KRITSCHEWSKY (*Monatsschrift für Geburtshülfe und Gynäkologie*, February, 1936) discuss the clinical diagnosis of pregnancy in its earliest stages. They emphasize that this can be done without recourse to biological tests, such as the Aschheim-Zondek test. Up to the sixth week they have used the Piscazek sign—irregular or asymmetric enlargement of the fundus—and found it present in 91·2% of cases. From six to twelve weeks Hegar's sign was positive in three-quarters of the cases examined, while Piscazek's sign was present in only one-quarter. Both are due to physiological processes and tend to merge into each other. As an additional sign of pregnancy in the earliest weeks they draw attention to the increased size of the ovary containing the *corpus luteum*. This was observed in 55% of 595 cases examined before the sixth week. It was noted in 13 cases that the enlarged ovary was on the opposite side to the Piscazek sign, and they consider that in such cases external migration of the ovum had probably occurred.

Blood Transfusion in Puerperal Sepsis.

J. ERBSLÖH (*Monatsschrift für Geburtshülfe und Gynäkologie*, January, 1936) has summarized the results of blood transfusion in cases of puerperal and post-abortal sepsis. He uses

citrated blood, generally from some other pregnant woman. It is given to all patients except those whose sepsis is well advanced when they are first seen. In such cases it does little good, except possibly to counteract the secondary anæmia. The author also excludes all patients showing cardiovascular weakness, especially when capillary congestion or septic pneumonia is present. Other contraindications are endocarditis, thrombophlebitis, severe renal involvement and metastases in the liver. In a series of 75 cases the mortality was 36%. Blood transfusion is of little use in severe cases when the blood count is nearly normal. When secondary anæmia is present, repeated transfusions, controlled by the blood count, are to be preferred to a single injection. While the author has had no experience with immuno-transfusion by means of preliminary injections of stock vaccines into the donor, he believes that the same results could be obtained with the use of blood from convalescent septic patients. In one case he has had success with this method of giving blood.

Delivery in the Knee-Elbow Position.

S. A. FRAYMANN (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1936) discusses the positions usually adopted during delivery and expresses a preference for the dorsal as compared with the left lateral position commonly employed in British circles. He has also observed in 536 cases the effect of delivery in the knee-elbow position. When the perineum is not protected, lacerations are more frequent than with delivery on the back. On the other hand, the incidence of birth traumata in the fœtus is much lower than with the customary position. The patients also considered that pain was less and that the actual delivery was easier than when delivery occurred in the dorsal position.

The Risk to the Infant in Breech Delivery.

THOMAS R. GOETHALS (*Surgery, Gynecology and Obstetrics*, March, 1936), writing from the Department of Obstetrics, Harvard Medical School, and the Boston Lying-In Hospital, reviews 1,242 breech deliveries and finds that the gross combined fœtal and neo-natal death rate was 25·7. Amongst these, however, were many cases in which the pregnancy was pathological, such conditions as pre-eclampsia, nephritis *et cetera* being present. Also prematurity of the infant was very common and contributed in no small measure to the mortality. The incidence of *placenta prævia*, *ablatio placentæ* and prolapse of the cord were respectively three, five and five times as great as with all types of delivery. In uncomplicated breech delivery the crude mortality in primiparous single pregnancy was 18·1%, and from multiparous single pregnancy 17·2%. If, however, these figures are further corrected, we find that the mortality is 6·9% for mature infants, 10% for immature, and 53·6% for premature; and therefore 6·9% represents the risk to the living, undeformed, full-term infant *in utero* who is destined to be born by pelvic breech delivery in the absence of pathological pregnancy on the part of the mother and of hæmorrhagic and other accidents of labour due to abnormalities of the placenta or of the umbilical cord.

The Influence of Head's Zones on Labour.

H. JOCKEL (*Monatsschrift für Geburtshülfe und Gynäkologie*, February, 1936) has investigated the effect of labour on the various cutaneous zones described by Head as associated with the uterus. At the onset of labour the sacro-iliac zone (D.XI) can be clearly marked out. As uterine contractions increase in intensity the hyperæsthesia tends to merge with that in the subumbilical (D.X) and sacro-inguinal (D.XII) zones. Frequently these latter areas are more marked on one side, but the reaction is never so positive as in the zone D.XI. The lumbar zones — sacro-femoral (L.1) and gluteo-crural (L.2) —are never distinct and occur only in combination with the three sacral (S. 3, 2, 1) and the abdominal areas. While Head did not consider that L.2 and S.1 had been proved to be connected with the uterus, Jockel believes that this is true, especially as regards the sacral segments. The cutaneous reactions rapidly disappear during the puerperium, that of D.XI remaining longer than the others. The author also attempted to stimulate uterine contractions by irritation of the skin areas of the abdominal wall corresponding to L. X, XI and XII. Stroking the abdominal wall with the blunt needle caused an immediate increase in the strength of the contractions and decreased the intervals. When mustard plasters were applied no immediate results were observed, but after an interval the pains were increased in intensity and remained at the new level until the effect of the plaster wore off. The application if ice packs had no effect.

Intracranial Hæmorrhage in the New-Born.

K. HOLLÓSI (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1936) considers that the ætiology of intracranial hæmorrhage is not always simple. It is probable that in some cases a constitutional abnormality of the blood is present. In the majority of cases the hæmorrhage is subdural and is generally associated with white asphyxia and irregular respiration, occasionally of the Cheyne-Stokes type. Lumbar puncture is a valuable help in diagnosis; similarly the presence of retinal hæmorrhages and the Moro reflex sign. Prophylaxis during labour, especially close observation of the fœtal heart rate, remains the main line of treatment. The author favours the use of chloral hydrate *per rectum* or "Luminal" given subcutaneously, together with raising the head in order to assist drainage of the sagittal sinus. The majority of patients succumb within a few days. Of the survivors, the risk of development of various cerebral lesions seems to vary, and many observers consider that intracranial hæmorrhage plays an unimportant part in the ætiology of conditions such as Little's disease.

The Ætiology of Eclampsia.

K. DE SNOO (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1936) discusses the ætiology of eclampsia with special reference to premature separation of the placenta. This was noted in 102 cases in a series of 197 eclamptics. The symptoms of eclampsia are largely due to the products of the placenta, not necessarily to a special toxin. The precursors of eclampsia are an increase of sodium in the blood, raised blood pressure, especially owing to arteriole spasm and an increased excitability of the fit centre, the result of the hypothetical placental products. The reflex arteriole spasm is responsible for hæmorrhage into various organs, including the uterus. Associated with this is severe damage to the renal parenchyma. The risk of damage to the brain and kidneys is much greater with *primiparæ* than with *multiparæ*, despite the fact that the arterial system in the latter group is often already pathological. By lowering the sodium content of the blood with a water and salt free diet the incidence of eclampsia is greatly reduced, because the fit centre is depressed owing to a change in its ion concentration. According to this view, eclampsia is not an example of poisoning, but the reaction of the body to the normal fœtal waste products when it is working under the strain of an abnormal mode of living of the patient.

Deaths from Cæsarean Section.

D. HÜSSY (*Monatsschrift für Geburtshülfe und Gynäkologie*, August, 1936) gives an elaborate survey of the deaths following Cæsarean section in a series of 810 cases. The operative mortality was 1·6% (13 cases). The importance of performing the operation in clean cases was illustrated by the comparison of the results obtained in such cases with those obtained in infected cases. Three uninfected patients died—one from pulmonary embolism and two from paralytic ileus. Ten infected patients succumbed—nine from peritonitis and one from septic thrombosis and embolism. The author emphasizes the risk of embolism, which, however, may occur almost as frequently following normal delivery.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held at the Women's Hospital, Melbourne, on August 19, 1936. The meeting took the form of a number of clinical demonstrations by the members of the honorary medical staff of the hospital.

Rupture of the Uterus.

PROFESSOR R. MARSHALL ALLAN showed a ruptured uterus. The specimen was from a patient, thirty-six years of age, whose previous obstetrical history had been uneventful. At term in her eighth pregnancy she fell into labour and was attended by a midwife. After five hours of labour a doctor had been sent for because of delay. Professor Marshall Allan said that the doctor had told him that as the head was engaged and the os completely dilated he had given one cubic centimetre of pituitary extract. The doctor had said that shortly after the injection the patient complained of severe pain and he had recognized that rupture had occurred. The patient had been sent to hospital in a moribund state and had lived for only one hour after admission. An autopsy had revealed a complete tear extending from the external os to the fundus on the left side. The fœtus, which weighed eight pounds, was in the abdominal cavity, while the placenta had been partially extruded from the uterus and the abdomen was full of blood.

Professor Marshall Allan showed three other specimens illustrating perforation of the uterine wall by a curette, a traumatic rupture during pregnancy and a rupture of the scar resulting from a Cæsarean section.

Twenty-two cases of uterine rupture which had been treated at the Women's Hospital since 1921 were summarized by Professor Marshall Allan. There had been six cases of spontaneous rupture, five of transverse presentation, four of rupture of the scar of a previous Cæsarean section, four of contracted pelvis and disproportion, and three cases of hydrocephalus. Professor Marshall Allan said that four cases, including two deaths, had been associated with the misuse of pituitary extract; there had been fourteen maternal deaths (64%) and all the children had been stillborn.

Pathological Specimens.

Professor Marshall Allan, on behalf of DR. G. B. BEARHAM, showed a series of specimens illustrating various degenerative changes in uterine fibromyomata; these included cystic and colloid degeneration, calcification, red degeneration, fibroids associated with combined intrauterine and extrauterine pregnancy, fibroids associated with carcinoma of the body of the uterus, and sarcomatous changes in fibroid.

Puerperal Sepsis.

DR. A. SHERWIN and DR. G. SIMPSON demonstrated by means of patients, charts and clinical histories, the various types of puerperal infection and methods of treatment employed in dealing with types ranging from mild sapræmia to severe forms of streptococcal septicæmia and *Bacillus welchii* infection.

1. Mrs. O'D., twenty years of age, was in her second pregnancy. The puerperium had been uneventful until the ninth day, when the lochia became profuse and offensive, with no rise in temperature or increase of pulse rate. The patient was treated expectantly and the lochia became normal and the patient was discharged from hospital.

2. Mrs. H.F., thirty-two years of age, had developed a typical septicæmia on the second day of the puerperium of her fifth pregnancy; she had been treated with olive oil injections into the brachial vein. The patient developed a metastatic abscess in the left leg, which had required incision and drainage.

3. Mrs. W., seventeen years of age, had first shown toxic symptoms on the fourth day of the puerperium of her first pregnancy. On the following day the abdomen was distended and the patient had diffuse tenderness in the right iliac region. The blood culture yielded no organisms, and when the patient was demonstrated on the eleventh day there was palpable swelling and tenderness on the right side above Poupart's ligament.

4. Mrs. D.M. had been suffering from predisposing causes of sepsis. The patient had been admitted to hospital with the history of severe albuminuria for ten days prior to delivery, of labour that lasted forty-eight hours, of a forceps delivery with a torn perineum, and of manual removal of the placenta with *post partum* hæmorrhage. The patient had a rigor the day following the delivery and had been admitted to hospital, where, in addition to routine treatment, she had seven blood transfusions.

The histories of Mrs. D.M. (4) and Mrs. A.H. (5), twenty-seven years of age were contrasted. Mrs. A.H., after her second pregnancy, had, following a normal confinement, signs of sepsis appearing on the second day, rigors and lower abdominal pain. The patient's temperature rose to 39·4° C. (103° F.), but the lochia were normal. Streptococci were recovered from the blood culture; cellulitis developed in the left leg, which was incised and drained, and the patient recovered.

6. Mrs. McM. had been admitted with a history of having inserted a gum elastic catheter into the uterus; her uterus had been curetted, but the catheter was not recovered. Fourteen days later posterior colpotomy was performed for an abscess in the pouch of Douglas and the patient was discharged from hospital ten days later. The patient was readmitted fourteen days after discharge with upper abdominal pain and difficulty in breathing; a skiagram indicated a subphrenic abscess, which was drained. The patient later developed bronchopneumonia and pleural effusion; she had passed the catheter ten days later by the rectum.

Dr. Sherwin and Dr. Simpson also demonstrated a case of *Bacillus welchii* infection. Mrs. K.R., twenty-seven years of age, at the time of the meeting was too ill to be removed from the ward. She had given a history of bleeding twenty-four hours prior to her admission to hospital. The patient denied interference, but had the typical bronze colour. The uterus was curetted and a total of 230,000 units of gas gangrene antiserum was given. Ten and a half pints of saline solution were given intravenously, and on four occasions four ounces of 50% glucose were also given intravenously. The urine had the typical Burgundy colour, the amount excreted in twenty-four hours being one ounce. Microscopic smears of *Bacillus welchii* and streptococci were shown for comparison; various antiseptics used in the hospital were demonstrated and discussed, as well as the various types of sera, vaccines, acriflavine, "Edwinal", olive oil emulsion, and others that had been used in the combat against sepsis.

Inversion of the Uterus.

DR. PERCY BRETT showed some charts, histories and radiographic films of four cases of acute inversion of the uterus and discussed treatment.

Uterosalpingography.

DR. N. L. SPEIRS, in collaboration with DR. COLIN MACDONALD, demonstrated the use of lipiodol uterosalpingography in the investigation of gynæcological conditions. Films were shown illustrating its use in the differentiation of uterine from ovarian tumours—uterine fibroid, carcinoma of the fundus, mole, ovarian cyst. Films showed the site of tubal obstruction. Abnormalities of uterine shape and position were shown. These included double and bicornuate uterus, retroversion and anteversion before and after operation, and the condition of the uterine cavity after the successful reduction of an inverted uterus. An unusual film was also presented showing that the lipiodol had permeated the uterine mucosa and entered the circulation; in the film the pampiniform plexus and the ovarian veins were beautifully outlined. This very

rare complication of uterosalpingography had occurred in a patient who could not speak any English and in whom the injection had probably been made at a time which was too near the menstrual period.

Vaginal Relaxation and Uterine Descent.

DR. B. M. SUTHERLAND demonstrated a series of patients to illustrate the degrees of vaginal relaxation and uterine descent.

Carcinoma of the Cervix Uteri.

DR. W. G. CUSCADEN showed a cinematograph film illustrating the use of radon in carcinoma of the cervix.

Toxæmias of Pregnancy.

DR. W. D. SALTAU, on behalf of DR. J. S. GREEN, showed a number of patients suffering from various toxæmias of pregnancy and illustrated his comments by means of the hospital history sheets.

A MEETING of the Victorian Branch of the British Medical Association was held at the Bendigo Base Hospital on August 29, 1936, DR. WALTER SUMMONS, the President, in the chair.

Chronic Ulcerative Colitis.

DR. J. W. COOK presented two patients suffering from chronic ulcerative colitis. One was a male, nineteen years of age, who had never been out of Victoria, but for the past three years had passed frequent stools containing blood, mucus and pus; this was associated with abdominal pain. Improvement with wash-outs and serum treatment occurred, but the patient had several relapses. No evidence of the presence of amœbæ in the fæces had been detected at any time; the presence of fairly deep chronic ulcers with raised edges and yellow bases was demonstrated by sigmoidoscopy, and the culture material obtained by direct swab from an ulcer produced colonies of *Staphylococcus aureus* and *Staphylococcus albus* only. Radiographic examination of the upper and lower portions of the digestive tract had been carried out without revealing any abnormal appearances. The Kline test gave no reaction. A course of treatment with Bargen's vaccine over a period of fifteen months proved unsatisfactory. From April, 1935, to the end of November of the same year the patient was in the Royal Melbourne Hospital under the care of Dr. L. E. Hurley. He was treated by means of a low residue diet, bowel wash-outs and enemata of starch and opium twice a week, and one ounce of kaolin was administered three times a day; injections of defatted milk in series of twelve injections, repeated every three months, were given without much improvement. Since the patient's return to the Bendigo Hospital the low residue diet and the wash-outs and enemata had been continued and injections of anti-dysenteric serum were administered, but the patient still had bouts of abdominal pain and two or three stools a day, some of which contained blood. His nutritional state was fairly good and he still weighed 69·3 kilograms (eleven stone).

The other patient shown by Dr. Cook was a woman, twenty-two years of age, who was admitted to the Bendigo Base Hospital on February 3, 1936. For the previous twelve months she had suffered from diarrhœa, passing about ten stools a day, many of which contained mucus and blood; she had lost 12·6 kilograms (two stone) in weight and her appetite was very poor. No dysenteric organisms were recovered from the fæces, and on sigmoidoscopy, though no ulcers were detected, the mucous membrane was seen to be very engorged. The Kline test gave no reaction, and on examination of the upper and lower digestive tracts nothing abnormal was seen. Treatment had consisted of low residue diet, astringent wash-outs, enemata of starch and laudanum, kaolin and Bargen's vaccine, but no lasting improvement had resulted.

DR. J. FORBES MACKENZIE said that he had a patient at Saint Vincent's Hospital undergoing treatment for this condition. Combined with dietary treatment, a variety of surgical procedures had been advocated from time to time, but the results were very disappointing. In certain cases complete wash-outs of the large bowel had been undertaken after appendicostomy; in others, complete colectomy was performed, and the operation of ileostomy for this complaint had been the subject of a recent contribution in *The Australian and New Zealand Journal of Surgery*. He recalled a patient whose small bowel he had anastomosed to the sigmoid colon; the patient had been wretched with diarrhœa for twenty years and the appendix had been removed after ten years. Dr. Mackenzie had found partial obstruction present owing to an anomalous constriction of the last foot of the small bowel, with dilatation above it, and the large bowel had a moth-eaten appearance and felt like wet brown paper. After the operation the patient had a profuse exacerbation of symptoms with six or eight stools a day, and later settled down, but still had three or four unhealthy stools a day. Dr. Mackenzie had advocated for some time the use of a diet comprising potato only in any shape or form, and no milk whatever; later on he would add whey or sherry-whey to the potato. With this *régime* he had seen some improvement, but had not yet seen a cure. He knew that many people used apple preparations in the treatment of patients with any diarrhœa which lasted three or four months.

DR. PETER R. SLATER said that he had administered the anti-dysenteric serum to this patient. On the first occasion sixty cubic centimetres were given with great improvement, and on the second occasion a total amount of one hundred and eighty cubic centimetres produced a violent serum reaction.

DR. S. O. COWEN commiserated with Dr. Cook for having to treat these patients, who were the bane of a physician's existence. Dr. Cowen thought that there was some kind of constitutional basis that was not yet understood. Dr. Dorothea Hare had put forward the idea that anæmia and avitaminosis required special attention in this disease; Dr. Cowen thought that treatment with iron had proved a very great help in combination with the other methods of treatment, but had by no means solved the problem. The occurrence of diarrhœa mainly at night suggested to him that the female patient might be achlorhydric and that some improvement might be expected if hydrochloric acid were administered.

The next point referred to by Dr. Cowen was the analogy that existed between this disease and non-specific arthritis, in which most patients benefited by persistent treatment of some kind; in some cases vaccines had been extraordinarily useful. One patient of his had been cured on three separate occasions promptly after intractable diarrhœa over a period of eight years, but successes were few. Dr. Cowen said that he favoured treatment with the apple diet, though he had no idea why it worked; it might have something to do with the malic acid. He had found it of use for symptomatic treatment on eight or ten occasions, but the improvement had been only temporary. Apple caused large, bulky stools, which were non-irritating and which looked like unchanged apple, and the tenesmus, which was often a troublesome feature, was relieved to a considerable degree.

On three occasions he had seen a condition resembling piles just inside the anus of patients suffering from the condition under discussion, and on referring the matter to his corresponding surgeon, Dr. Hailes, he had been informed that Dr. Hailes suggested that the inflammation in the submucosa extended down until almost a prolapse occurred, resembling cellulitis owing to its swollen, œdematous appearance. In two of these cases a great deal of the bleeding had come from the anal orifice rather than from higher up. In conclusion, Dr. Cowen considered that in the light of present knowledge treatment was unsatisfactory, but he ventured to suggest that vaccine treatment and treatment by means of preparations of apple were worth trying.

DR. C. FARRAN-RIDGE said that there was a very large amount of chronic colitis in the metropolitan mental hospitals and that between forty and forty-five patients died

from it each year. He had been impressed with the view of A. F. Hurst, who had stressed the importance of the organisms of bacillary dysentery in the ætiology. They had recovered Flexner-Y and Sonne organisms at Mont Park. It was wise to commence energetic treatment at the outset; they used a dose of two drachms of magnesium sulphate or sodium sulphate hourly at first, and gave anti-dysenteric serum, sixty to ninety cubic centimetres, and perhaps some of it by the intravenous route. He had not found that the apple treatment was a success, and indeed he had been able to grow Flexner organisms on apple in the laboratory. He remembered an autopsy performed at Mont Park approximately nine years previously, at which unhealed dysenteric ulceration was found in a patient with well-marked pernicious anæmia. He had also noted the occurrence of entero-colitis in which the small intestine was seriously damaged. Many of the mental hospital patients got weaker and thinner and died without obvious cause.

Dr. Cook, in reply to the discussion, added that it had been found by a test meal that the female patient suffered from achlorhydria.

Lymphoid Hyperplasia.

DR. W. E. HARRISON showed a female patient, sixty-eight years of age, who some two years earlier had come under notice complaining of a lump in the throat, an irritating cough and, later, dysphagia and thickened speech; she had lost nine kilograms (twenty pounds) in weight in two years. An irregular lumpy condition had been found on the posterior third of the tongue, projecting about 2·5 centimetres (one inch) above the surface and involving the sides and dorsum of the root of the tongue. The faucial tonsils were normal and the Wassermann and Kahn tests gave no reaction. A section of the tumour was examined by Dr. C. H. Mollison, who reported that the section consisted of lymphoid tissue with thickened epithelium and lymphoid hyperplasia. Treatment by means of electro-coagulation was carried out on the right side on March 14, 1935, and five weeks later on the left side, but the patient then objected to further treatment of this nature. For a period of five weeks from March 5, 1936, the patient had had an attack of diarrhœa associated with left-sided abdominal pain; a hard, tender swelling was found filling up the left lumbar region and extending from the costal margin almost to the left iliac fossa. Cystoscopic examination established that the bladder mucosa was normal, and a pyelogram showed that the outline of the left kidney was somewhat low, to the level of the fourth lumbar vertebra, and two major calyces and the pelvis were visualized. The result suggested the presence of an extra-renal mass, which Dr. Harrison believed to be an enlarged spleen. A barium enema was given and the splenic flexure was found to be low and no filling defect was detected. Microscopic examination of the urine was carried out without the detection of any red blood cells or any other abnormal cells. Blood examination findings were normal, except for relative lymphocytosis and mild secondary anæmia. Three days before the meeting the red cells numbered 4,400,000 and the white cells 11,000 per cubic millimetre, and the hæmoglobin value was estimated to be 70%; 53% of the white cells were lymphocytes.

Dr. Harrison stated that the mass on the left side of the abdomen had not been discovered for about eight months after he had first seen the mass on the tongue, and he would like an expression of opinion concerning the inter-relationship which might exist between them and the possibility that they might be manifestations only of a general hyperplasia of lymphoid tissue, or due to some pathological condition of the blood or chronic infection with stimulation lymphopoiesis. The patient was 10·35 kilograms (twenty-three pounds) underweight, and in other respects her health was good.

DR. T. H. ACKLAND referred to the possibility that the condition from which this patient was suffering should be classified in the rather hazy group of lymphomata. It would be necessary to exclude a malignant condition in the throat, such as lymphoepithelioma, in which such a mutation of cells occurred that it was often very difficult to recognize them. Such a malignant condition, in his experience, had invariably been associated with massive cervical adenitis, which was not present in this case; lymphosarcoma could be ruled out by the length of the history. Dr. Ackland said that he regarded the mass in the abdomen as an enlarged spleen, and the mass in the throat as a benign tumour. Both should be sensitive to irradiation. Dr. Ackland suggested the application of two hundred or three hundred "*R*" with low filtration. The response of the blood picture and of the masses to small doses of deep X ray therapy would be informative. The presence of chronic infection was a distinct possibility, and leuchæmia should be thought of, though if leuchæmia was present the presence of other enlarged lymphatic glands would be expected.

DR. S. O. COWEN said that he was not by any means certain that the abdominal mass was a spleen; the shape was queer and the mass was rather well over to the flank; these masses were not always spleens; the spleen should not be examined except from the left side, and then one should make sure that it did not fill the loin. Dr. Cowen had mistaken carcinoma of the left kidney for an enlarged spleen on two occasions; the first of these mistakes had been due to not noticing that the mass filled the loin, and on the second occasion he had missed the fact that red blood cells were present in the urine. He agreed with Dr. Ackland that the patient had some unusual kind of lymphoma. In children especially it was possible to see the stages in the development of lymphatic leuchæmia, and he would advise Dr. Harrison to repeat the blood examination at intervals of two months. He remembered that MacCallum referred to the condition called leucosarcoma (ascribed by him to Sternberg), which might be applicable in this case. Dr. Cowen, in conclusion, regarded the mass as a spleen, and the condition as belonging to the ill-defined family known as lymphocytomata.

DR. WALTER SUMMONS, before inviting Dr. Harrison to reply, emphasized that it was impossible to diagnose all cases before the death of the patient.

Dr. Harrison said that he felt sure the mass was a spleen because of the absence of red blood cells from the urine, the clear outline of the left kidney in the skiagram along which the mass came down, and the low position of the splenic flexure; owing to the general visceroptosis it was not surprising that the spleen was rather low.

Gumma of the Liver.

DR. S. L. TOWNSEND showed an elderly female patient, who five years earlier, after a breech birth at the Women's Hospital, Melbourne, had had a septic puerperium. She had been told then that there was a swelling in the epigastrium which should be investigated when she was better. As she had been free of pain she did not worry about it, but presented herself two weeks before the meeting in the out-patient department of the Bendigo Base Hospital on account of fullness of the stomach with tightness in the chest and epigastric discomfort after meals. Enlargement of the thyreoid gland and splenomegaly were detected in addition to an irregularly enlarged, firm liver. Double positive reactions had been obtained with the Wassermann and Kahn tests of the blood, but the Casoni intradermal test gave no reaction. The red cells of the blood numbered 4,500,000 and the white cells 11,000 per cubic millimetre, and the hæmoglobin value was estimated to be 90% (Haldane); there was no eosinophilia. Skiagraphy of the stomach and transverse colon failed to reveal any abnormality and no mediastinal tumour was visualized in the film of the chest. There were no abnormal neurological or cardiac signs, nor was there any free fluid in the abdomen; the urine was normal, and the amount of urinary diastase was within normal limits. Dr. Townsend said that the patient was being given mercury by mouth and inunction of mercury was about to be initiated, and he had prescribed a mixture of potassium iodide and perchloride of mercury; he thought that it was better not to give injections of arsenical preparations.

DR. FORBES MACKENZIE and DR. A. E. COATES considered that it was not possible to exclude the diagnosis of malignant disease of the liver.

Prostatic Enlargement.

DR. R. SHATIN recounted the history of a male patient, eighty-two years of age, who had died a few days before the meeting. The old man had for several years had difficulty in commencing micturition with incontinence for three months, associated with nausea and occasional vomiting; his mental condition was poor, his tongue was dry. His systolic blood pressure was 186 millimetres of mercury; the heart was much dilated; extrasystoles were present and the lungs were grossly emphysematous, with numerous crepitations at the bases. The prostate gland was uniformly enlarged, but not adherent; the urine contained acetone, albumin, blood, pus and coliform bacilli, and the specific gravity was 1020. The maximum percentage of urea concentrated was 1·4 at the third and fourth hours after the test was commenced, and the blood urea was estimated to be 32 milligrammes per 100 cubic centimetres; the amount of residual urine was only one ounce, and the patient died in uræmic coma.

DR. WALTER SUMMONS asked for a discussion of the criteria for operation, the means of getting the patient fit for operation, and the best operations to perform in such a case as that described by Dr. Shatin.

DR. A. E. COATES said that whatever operation was contemplated in an old man of this kind should be done in two stages. Infection was present and probably a lowered kidney function, and the patient was in bad condition with chronic bronchitis and myocardial degeneration; a preliminary suprapubic drainage was advisable. The prostatic hypertrophy would probably be of the benign type, and if retention of urine was present the suprapubic puncture could be carried out best by introducing an ordinary hypodermic needle; cellulitis and hæmorrhage were liable to occur if a trocar and cannula were used. Then under local anæsthesia a transverse incision should be made reasonably high into the cave of Retzius and the bladder could be picked up and a tube introduced into it. Hæmorrhage was the bugbear, and the bladder wall, which was always very engorged, should be snugly sutured to the drainage tube. At the second stage of the operation he favoured the modified Harris procedure, in which, after enucleation of the prostate and the tag of urethra, a small flap of mucous membrane was sutured down neatly onto the posterior wall. This procedure made prostatectomy a nice job. A number 12 catheter should be introduced; a larger one was liable to result in gangrenous urethritis. A drain tube was placed in the bladder for safety, and a piece of rubber dam in the cave of Retzius. Dr. Coates added that the transverse incision was an improvement; it could be enlarged without the peritoneal cavity being entered. An illuminated retractor was also a great advantage. Transurethral work was a specialty suited for the bar type of enlargement, and much of this prostatic surgery was better left in the hands of the genito-urinary surgeon.

DR. A. LAZARUS said that the patient described by Dr. Shatin belonged to the class of patient who might stand a shave or a haircut if it were done in two stages. The mortality rate at Saint Peter's Hospital was found to be greater for those patients upon whom an immediate suprapubic cystotomy had been done, possibly because the patients were in such poor condition that they could not even stand that. He thought it was better to treat them at first by means of a self-retaining catheter or a tied-in catheter and some form of decompression. Dr. Lazarus described a simple intermittent irrigation apparatus the use of which sometimes improved the condition of the patient sufficiently for a one-stage operation which was easier both on the surgeon and on the patient. Dr. Lazarus remarked on the inefficacy of blood urea figures as exemplified in the case of Dr. Shatin's patient. He did not take any notice of the figures unless they were high. He still followed the Thomson-Walker technique, probably because he knew where he stood with it. He had never seen a patient die from hæmorrhage *per se*, which was probably his good fortune; he controlled hæmorrhage by means of washing out with silver nitrate in a dilution of one part in twenty thousand at a temperature of 120° F., and after washing and rewashing he put in a tube.

Approximately 10% of patients with enlargement of the prostate gland should have cystoscopic diathermy. Life could be prolonged in carcinoma of the prostate with retention by suprapubic cystotomy for a period of five or six years, whereas expectation of life after cystoscopic diathermy was only two or three years, but with normal micturition.

DR. C. H. OSBORN recounted a recent experience; he had performed prostatectomy on a man in good condition, with normal renal function tests, who four days after operation developed a strange condition of the wound. When the small tube was removed necrosis of the wound was seen, and when after ten days the silkworm sutures were taken out, the wound was laid open as it had been at the operation; a grey slough extended deeply in and involved the bladder wall. The general condition of the patient had rapidly deteriorated, and though some improvement was apparent after transfusion the wound looked just as bad as before. He was perplexed, and in discussing the matter with a colleague the condition known as alkaline necrosis was suggested. On passing a metal instrument over the slough a gritty feel could be appreciated; this was due to an alkaline deposit from the urine, which showed definite alkalinity. Small bags of boric acid crystals were placed in the wound every hour, but it was in the same state after three weeks of this treatment. He had next tried mandelic acid therapy without benefit. Ultimately he had used a constant boric acid drip; in two days the slough had separated, leaving a normal granulating wound which had led to complete and satisfactory healing, and the patient was able to go out of hospital in good condition. Dr. Osborn thought that it might be of interest to others present if he made this reference to alkaline necrosis following prostatectomy.

DR. THOMAS KING said that he was interested in the apparatus described by Dr. Lazarus, which he had found useful for heavy patients undergoing orthopædic treatment. It might not be generally known that the apparatus was obtainable in Melbourne and was known as the Lazarus bladder irrigating apparatus.

DR. FORBES MACKENZIE said that a French surgeon had suggested that saccharin should be used in infected bladder cases; Dr. Mackenzie had used it to this day and regarded it as the best urinary antiseptic; he also cut the carbohydrate out of the diet. By this means the bladder corner in his ward had been sweetened up considerably. There was less tendency to phosphatic deposit and to the occurrence or recurrence of calculi.

(To be continued.)

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Hart, John Wesley, M.B., M.S, 1890, M.D., 1898 (Edinburgh), 74, Woods Street, Manly.

Rose, Norman Henry, M.B., B.S., 1936 (Univ. Sydney), Sydney Hospital, Macquarie Street, Sydney.

Medical Societies.

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Melbourne, on Wednesday, July 8, 1936, DR. C. H. OSBORN, the President, in the chair. The meeting took the form of a series of clinical demonstrations.

Subdural Hæmorrhage.

DR. H. BOYD GRAHAM showed a baby, aged fifteen months, who had been shown by him at the meeting of the Society on July 10, 1935 (see THE MEDICAL JOURNAL OF AUSTRALIA, November 16, 1935, page 700). The baby had recovered completely from the right-sided hemiplegia which had led to the diagnosis of left parietal hæmorrhage and to the operative removal of subdural clot by Dr. C. W. B. Littlejohn when it was only six days old. Subsequently a brachial monoplegia of the left side developed, but this was clearing up gradually. For a long time ptosis of the left eye and paresis of the extrinsic muscles of the left eye had persisted, but the baby had become able to move the eye in all directions except upwards, and the ptosis was scarcely discernible. It was still too early to be certain of the amount of vision in the left eye, but the baby appeared to be able to distinguish light at least with it, and could see quite well with the other eye. He was a big, strong baby, who weighed 12·8 kilograms (twenty-eight and a half pounds). The speech was normal for the child's age and he could move about very freely in the sitting position, but had not yet commenced to walk. The deficiency in the bone had not closed, but when the baby was not excited no bulging occurred.

DR. A. P. DERHAM said that Dr. Graham's case recalled to him an infant who had been under his care and who was operated on by Dr. W. G. D. Upjohn at the age of six months. The baby had a little depression over the left frontal bone and was having fits of the Jacksonian type. A large blood cyst was evacuated, but the fits continued till at the age of nine months the "Luminal" was stopped. The child had been having 0·27 gramme (four and a half grains) of "Luminal" per day, and after it was stopped he had fits occasionally and only when he was excited or emotional. Dr. Derham commented further that, though he had such a large cerebral injury, the child had not shown any abnormal neurological signs, except after a fit, and though the lesion was left-sided, the boy became the most intelligent child in the institution; at the age of seven years he was quite a normal healthy child, though he had a fit occasionally.

DR. F. KINGSLEY NORRIS said that he thought Dr. Graham had got a very good result. Dr. Norris thought it was an important case. The usual difficulty was that it was almost impossible to localize the brain lesion in birth hæmorrhage, and the damage was as a rule very extensive. In the case under review he had been very interested in the eye changes that had been described; he thought they were unusual and difficult to explain. He remembered a baby, aged fifteen months, with a cerebral tumour but no eye changes; 330 cubic centimetres (eleven ounces) of fluid had been removed from a huge left-sided gliomal cyst.

Scaphocephaly.

DR. COLIN MACDONALD demonstrated radiograms of a skull of an unusual shape possessed by a boy aged two years; he contrasted them with a normal skull of this age, and also with the well-known abnormality of oxycephaly. The medical superintendent had described this type of skull as "a reversed streamline type not unlike a loaf of bread". Dr. Macdonald felt inclined to deem it a mild example of scaphocephaly. Scaphocephaly, or boat-shaped cranium, was ascribed to premature ossification of the sagittal suture which projected like the keel of a boat; lateral expansion of the skull was unable to take place and therefore the skull lengthened antero-posteriorly and remained narrow from side to side. There was also a tendency to fœtal synostosis of the facio-cranial bones.

Oxycephaly had numerous synonyms, such as acrocephaly, "tower" or "steeple" head, turricephaly. In oxycephaly the skull towered upwards and there was a narrow antero-posterior diameter, resembling the traditional helmet of the Roman legionaries. Convolutional markings were very prominent, owing to the increased intracranial pressure; and exophthalmos with divergent squint and nystagmus were often present. The cause was ascribed to premature synostosis of the coronal and sagittal sutures; this was undoubtedly so, but probably the cranial changes were only part of a more extensive bony dystrophy, as there might be associated (i) imperfect extension of the elbow joints, and (ii) flattening, thickening and curving outwards of the first phalanx of each thumb.

Scaphocephaly was associated with under-development of the greater wing of the sphenoid, and oxycephaly with the overgrowth of the greater wing of the sphenoid, which produced an appearance of ocular hypertelorism, as was shown in this case. Dr. Macdonald said that in the condition usually known as hypertelorism or Greig's hypertelorism, it was the overgrowth of the lesser wings of the sphenoid, unassociated with craniostenosis, which was the essential feature.

Oxycephaly was compatible with unimpaired intelligence, but a true scaphocephaly was often associated with a certain degree of mental retardation, and it was thought that the patient demonstrated had some slight mental impairment. Dr. Macdonald said that on the subject of skull shapes, of interest to both the radiologist and the clinician, apart from oxycephaly, scaphocephaly and hypertelorism, there had not been much written. It might be thought that the skull moulding associated with abnormal birth presentations would persist throughout life, but at the Women's Hospital Dr. Macdonald had found that these appearances seldom lasted for more than a few days.

DR. H. C. COLVILLE demonstrated some films of a child, aged three months, who had been under his care with a similar condition of the skull which was also regarded as an example of scaphocephaly.

Meningococcal Meningitis.

DR. IAN WOOD showed a baby, one year of age, who appeared to be in perfect health; only forty days had elapsed since his discharge from the Children's Hospital after an attack of acute meningococcal meningitis. Dr. Wood said that his object in showing this baby was to open a discussion on the serum treatment of this disease. The disease carried a mortality rate at the hospital of approximately 60%, and he thought that this mortality might be reduced if unanimity could be arrived at as to the best method of treatment. Dr. Wood referred to the monograph published by Dr. N. Hamilton Fairley in 1916, in which he gave a very fine description of the epidemic in Melbourne and analysed the various methods of treatment. Dr. Fairley's control series did almost as well as those who were treated by serum, and this raised the question of the value of serum in the treatment of this disease. Dr. Wood had satisfied himself that when serum was given into the thecal space it would not sweep around and pass through the meninges until after absorption and redistribution through the circulatory system. Intrathecal treatment had, with justice, been compared with the treatment of faucial diphtheria with a gargle of antitoxin. Moreover, intrathecal treatment caused serous meningitis. For these reasons Dr. Wood regarded it as logical to give the serum intravenously. In the treatment of the child shown by him he had used an antitoxic and not an antibacterial serum. He had given sixty cubic centimetres intravenously on the fourth day, when the cell count was 2,400 cells per cubic millimetre, and thirty cubic centimetres intramuscularly on the seventh day, and had repeated thirty cubic centimetres intramuscularly on the twelfth day. On the nineteenth day the fluid removed by lumbar puncture was sterile and clear, and the cell count was only fifteen cells per cubic millimetre. The child's recovery had proceeded uninterruptedly since, and though it was rather early to be sure, there was no reason to expect any sequelæ. Such a result raised the question as to the length of time that serum lasted in the blood stream. Dr. Wood said that research work had been done with diphtheria and with tetanus antitoxin. These sera had been chosen because the amount in circulation could be easily titrated. Ten thousand units of diphtheria antitoxic serum had been given intravenously, and at the end of one day 5,000 units remained in circulation and one thousand units were still present at the end of six days. Such a result confirmed the practice adopted by Dr. Scholes at the Infectious Diseases Hospital of giving a large dose on the admission of the patient and not

repeating it. In his work on tetanus antitoxic serum Spooner had shown that, with an initial dose of 200,000 units, 50,000 units remained in the circulation after seven days, and 2,500 units were present after fourteen days. It seemed irrational to repeat the dose at an earlier interval than one week after the initial large dose.

DR. STANLEY WILLIAMS said that as medical superintendent of the hospital he had during the past year observed closely the treatment of four children suffering from cerebro-spinal meningitis. Of two children treated entirely with the usual antibacterial serum, given chiefly intramuscularly, but partly intrathecally and partly intravenously, one had been discharged apparently cured but had died quite recently from chronic meningitis and hydrocephalus, and the other had died in hospital. The third child was treated at the end of July, 1935, with 200 cubic centimetres of antimeningococcal serum, given by the intravenous route, and recovered satisfactorily; she was perfectly well on July 7, 1936, and was in regular attendance at school. The fourth patient was a baby who was admitted to hospital on June 12, 1935, at the age of two months with a history of meningitis of five days' duration; typical meningococci had been recovered from the cerebro-spinal fluid, which had contained 2,000 cells per cubic millimetre. He was treated with meningococcal antitoxic serum and received 30 cubic centimetres on each of the first two days by the intramuscular route and subsequent injections of 30 cubic centimetres of the same type of serum on each of four occasions intraventricularly through the anterior fontanelle. He, too, had recovered, and when seen on July 6, 1936, could walk and say a few words, and appeared to be well, without any evidence of hydrocephalus.

DR. H. MCLORINAN, the resident superintendent of the Infectious Diseases Hospital, said that he had not had any personal experience of the use of antitoxic serum in the treatment of meningitis. Some two years ago Ferrie had discovered the toxin of the meningococcus and it had appeared to be debatable at the time whether it was a true exotoxin; it had been tried in London, and a report had appeared of the treatment of about thirty patients in the London County Council Fever Hospital, the results of which, though favourable, had not been conclusive. Dr. McLorinan pointed out that cerebro-spinal meningitis was not an ideal disease for the use of antitoxin; it was not a very toxic disease; the actual inflammation itself in the closed space caused the symptoms and often killed the child. Further, it was recognized that antitoxin had very little effect in the presence of pus, and Dr. McLorinan could confirm this view as a result of his experience with the use of antitoxin in the treatment of septic scarlet fever patients; the prospects were not hopeful that it would be dramatic in cerebro-spinal fever, though it might be very useful in the early stage of the disease. He would like to have a series of patients treated with the antitoxic serum systematically, because he did not think that the old anti-bacterial serum had been entirely satisfactory.

DR. E. V. KEOGH said that it was hard to differentiate clinically between the two types of serum; Ferrie's antitoxin had given encouraging results clinically and was capable of standardization, though the agglutinating powers did not run parallel. To see whether the results were really good, many more patients should be collected and treated by a standard method for a period of about five years. Reports of the treatment of isolated cases at different times, at different places, could not be compared satisfactorily because of the well-known differences in the severity of the disease; all that could be said at present was that the results that had been reported were encouraging.

DR. A. P. DERHAM issued a word of warning about prognosis; certain patients who appeared to have made a good recovery had developed temperamental changes later on.

DR. H. E. VILLIERS said that she had seen a patient whom she had regarded as completely recovered, but quite recently the mother had informed her that the child was unmanageable and had become an aggravating little tyrant instead of being amiable and docile.

DR. W. W. MCLAREN said that he thought it was wiser to avoid lumbar puncture after the diagnosis had been established. He had formed the impression that this operation was done too often. It should be remembered that Dr. Reginald Webster had proved that a serous meningitis was likely to be provoked by repeated lumbar puncture.

DR. H. C. COLVILLE pointed out the omission by Dr. Ian Wood of reference to the asssociation of the late Dr. Cedric A. Stewart with Dr. N. Hamilton Fairley in their masterly exposition of the subject, which was almost entirely clinical and original. Dr. Fairley had been in charge of the work at the Melbourne Hospital and Dr. Stewart at the Alfred Hospital. Dr. Colville had inherited the late end of the epidemic by taking over the work from Dr. Stewart, and he appreciated the reasons for decrying the intrathecal administration of serum. In the later cases in the epidemic intravenous therapy had been used, and while the cases were not nearly so numerous, it had been felt that a definite improvement had been brought about by concentrating on the intravenous method. The occurrence of hydrocephalus was a frightful business, and Dr. Colville regarded internal hydrocephalus in adults as one of the most terrible afflictions; the patient suffered an agony of headache. From the surgical point of view through a trephine hole repeated decompression of the ventricles could be carried out with a needle. He wondered whether an attack could be made through the posterior fossa; freeing the roof of the fourth ventricle had been very useful in post-arachnoiditis, but he had had no experience of it in meningococcal meningitis.

DR. C. H. OSBORN, in commenting on the patient shown by Dr. Wood, referred to the aphorism that there was nothing very new under the sun and quoted Trousseau's cynicism: "Hasten, gentlemen, to use a new drug while it still has the power to cure", in support of his view that it was too early to draw any conclusions about the superiority of antitoxic over antibacterial serum in the treatment of cerebro-spinal meningitis.

DR. IAN WOOD apologized for his grave omission in leaving out the name of the late Dr. C. A. Stewart. It was of importance to be able to assess the cause of hydrocephalus, which was so commonly a complication or sequela of cerebro-spinal meningitis; probably the meningitis led to a widespread blockage of the absorptive apparatus. Dr. Wood thanked Dr. Keogh for his contribution to the discussion and agreed with his suggestion about the desirability of a thorough and systematic trial of the antitoxic serum under clinical conditions.

Bilateral Renal and Ureteric Lithiasis.

DR. A. P. DERHAM showed a boy, six years of age, who had been admitted under his care at the hospital on May 11, 1936. A very large crescentic scar was present across the lower part of the abdomen; through it ureteric calculi had been removed three years earlier. The patient was admitted to hospital because he had had nocturnal frequency of micturition with pain and scalding on passing urine. He was a very sick child, with severe headache, generalized abdominal pain and frequent vomiting, and was extremely thirsty; the temperature was 38·9° C. (102° F.) and the urine was loaded with pus cells, but no organisms were seen. Radiography of the renal tract revealed bilateral ureteric calculi. At that time the blood urea was estimated to be 230 milligrammes per 100 cubic centimetres, and the child was extremely dehydrated. He was given continuous intravenous injections of 2% glucose in normal saline solution with considerable improvement and a reduction in the blood urea to 48 milligrammes. Dr. Derham said that at that stage he had passed the patient over to Dr. Whitaker for surgical treatment.

DR. J. G. WHITAKER said that on June 3, 1936, he had performed a left nephrolithotomy under gas and oxygen anæsthesia and had removed a large calculus. In the post-operative treatment again, continuous intravenous injections of 2% glucose and saline solution had been used and the child had received eight pints in two days; the urinary output had become normal and the child had improved slowly. Ten cubic centimetres of "Uroselectan" had been introduced intravenously on July 7, 1936, and

Dr. Whitaker demonstrated in the skiagram that the child still had a large calculus in the right kidney and ureter, but that the left kidney, ureter and bladder were clear. He invited discussion on prognosis and further treatment.

DR. HAROLD MOORE said that McCarrison had suggested that diet was a very important factor in the ætiology; the incidence of calculus decreased as the standard of living was raised. Blood calcium and blood phosphorus investigations usually gave normal figures. With reference to prognosis, in view of the previous operation three years earlier and the present recurrence, there was still a risk of further recurrences; the other risk was infection. Possibly nephrectomy would be necessary and removal of the ureteral calculus from the other side. The "Uroselectan" method of measuring renal function was not always reliable, and its failure should not be taken to exclude renal efficiency. Dr. Moore recounted the details of the history of a child fourteen years of age, who had a stone impacted in the urethra; mottled shadows were found in both kidneys; the blood calcium and blood phosphorus figures were normal; the blood urea was 44 milligrammes per 100 cubic centimetres; the urea concentration in the urine went up to 1·75%. Several films showed further stones coming down, and the patient passed a few over a period of two years, but was now quite reasonably well and was working. Dr. Moore also referred to a patient with pyuria who had passed a stone *per urethram*. The skiagram showed a shadow on the left side and quite a large one in the bladder; the left ureter was normal, but a megaloureter was present on the right side; the blood urea was 36 milligrammes per 100 cubic centimetres, and the highest figure in the concentration test was 1·5%. In conclusion Dr. Moore said that the treatment of these patients was not very satisfactory and that one had to do one's best to make them comfortable.

DR. A. P. DERHAM added that he had recently read a summary in which the writer stated that the metabolic factor in lithiasis was not understood; probably infection or some renal stasis or both were essential factors in the production of the calculi; to leave calculi *in situ* was to court disaster; that in bilateral cases it was advisable to remove the other stone soon after the first one; recurrence was almost certain; and it was advisable to ascertain the type of crystals in the calculi and to change the reaction of the urine.

Dr. Whitaker thanked Dr. Moore and the others who had contributed to the discussion, and stated that he hoped to operate on the other side very soon.

Infantile Paralysis.

DR. FRANK TATE showed a moving picture film which he had prepared and which depicted the method of management of the children in the infantile paralysis ward at the Convalescent Cottage at Brighton, Victoria, and the way in which they were rested in splints.

Post-Graduate Work.

LECTURES BY DR. KELLOGG SPEED.

THE New South Wales Post-Graduate Committee in Medicine announces that arrangements have been made for a course of four lectures on fractures to be given by Dr. Kellogg Speed, S.B., M.D., F.A.C.S., Professor of Clinical Surgery of the Rush Medical College of the University of Chicago, Surgeon to the Presbyterian Hospital, and Surgeon to the Cook County Hospital. Dr. Kellogg Speed is the author of the well-known text-book on "Fractures and Dislocations".

The lectures will be given as follows:

Monday, January 25, Robert H. Todd Assembly Hall, 135, Macquarie Street, Sydney, at 8.15 p.m.: "Compression Fractures of the Vertebræ, with a Short Talk on the Mechanism of Fractures".

Wednesday, January 27, Robert H. Todd Assembly Hall, 135, Macquarie Street, Sydney, at 8.15 p.m.: "Injuries of the Knee Joint, Exclusive of Fracture".

Friday, January 29, The Prince Henry Hospital, at 4 p.m.: "Unhappy Results in the Treatment of Fractures". Film on the first-aid treatment of fractures of the lower extremities.

Tuesday, February 2, The Prince Henry Hospital, at 4 p.m.: "Fractures about the Elbow Joint". Film on the surgical treatment of chronic osteomyelitis.

The fees for the lectures will be £2 2s. for the four lectures, or 12s. 6d. for a single lecture. Tickets may be obtained on application to the Secretary, New South Wales Post-Graduate Committee in Medicine, University of Sydney, Sydney.

Correspondence.

A TUBERCULOSIS CONFERENCE IN ENGLAND.

SIR: The "Empire Conference on the Care and Aftercare of the Tuberculous", organized by The Over-Seas League and Papworth Village Settlement, will open in London on May 3 next. The Conference is under the patronage of His Royal Highness the Duke of Kent. The President of the Conference is the Marquess of Willingdon, and among the Vice-Presidents are Lord Horder, Sir Humphry Rolleston, Sir Farquhar Buzzard, Sir Robert Philip, Sir Walter Langdon Brown, Sir St Clair Thomson, Professor S. Lyle Cummins and Professor John A. Ryle.

Sir Pendrill Varrier-Jones, Director of the Papworth Village Settlement, is especially anxious that one or more Australian physicians should attend the Conference. In a recent letter he has stated that there will be two main days in London, consisting of four sessions; each session will be devoted to one Dominion, with a leading speaker representing the tuberculous work in his Dominion. A tour of the Papworth Settlement and a series of receptions, garden parties and the like will afford ample opportunity for members of the Conference to meet one another and to discuss informally the various problems.

The organizers of the Conference hope that a small permanent committee will be established and that a scheme will be elaborated for making available regular reports on tuberculous work in the various parts of the Empire.

It will be appreciated if any physician from Australia interested in the subject and visiting England at the time of the Conference will communicate with Sir Pendrill Varrier-Jones, or with the Secretary of the Conference at 16, Arlington Street, London, S.W.1.

Yours, etc.,
A. R. SOUTHWOOD.

Adelaide,
December 3, 1936.

SCHILLER'S TEST.

SIR: In a review of Wilfred Shaw's "Text-Book of Gynæcology" which appeared in the issue of your journal on September 12, but which has only just come under my notice, Schiller's test is referred to as a means of "diagnosing between early carcinoma and ordinary erosion". I believe this rather misrepresents the possibilities of this test and is far beyond anything claimed by Walter Schiller. It is not specific. The test will distinguish between normal vaginal epithelium and abnormal, the former being stained a mahogany brown by the iodine solution—a weaker solution (1 in 300) is preferred to Lugol's (5%). Thus by a contrast of colour even the

smallest unstained areas may be detected (Schiller has a specimen of a carcinoma three millimetres in diameter), and then the suspicious area is further examined by scraping a little of the tissue with a sharp spoon (Schiller) or by excision (Oskar Frankl), and the diagnosis is made by the histological appearances—carcinoma or erosion or syphilitic leucoplakia or perhaps the keratosis that occurs with the exposure and drying of the portio in prolapse.

Schiller's test is also used when contemplating a Wertheim hysterectomy, as it indicates the full extent of the invasion of the vagina and so helps to estimate the amount of that organ that must be removed.

Yours, etc.,

M. W. GINSBERG.

172, New South Head Road,
Edgecliff,
New South Wales,
December 4, 1936.

ROBERT BOYLE.

SIR: In an eloquent and learned address which appears in THE MEDICAL JOURNAL OF AUSTRALIA, December 5, 1936, page 580, and for which many readers will feel grateful, Colonel Southwood describes the author of "The Skeptical Chymist" and his stimulating influence in the foundation of the Royal Society and on the investigations of medical scientists. Boyle's actual words seem worth repetition: "To explicate a phenomenon, it is not enough to ascribe it to one general efficient cause, but we must intelligibly show the particular manner how that general cause produces the proposed effect."

Possibly Dr. Southwood may have found the traditional epitaph too frivolous for his pious commemoration:

Here lie the remains of
The Honorable Robert Boyle,
Father of English Chemistry
And Brother of the Earl of Cork.

Yours, etc.,

GUY GRIFFITHS.

131, Macquarie Street,
Sydney,
December 6, 1936.

Proceedings of the Australian Medical Boards.

VICTORIA.

A MEETING of the Medical Board of Victoria was held on October 7, 1936.

Registration.—Monica Frega Stuart Knox-Knight (*née* Donnelly), M.B., Sydney University, 1933, was, on production of her marriage certificate, registered in her married name.

Registration Refused.—Vivian Ramsay Smith, M.B., B.S., Edinburgh, 1913.

Additional Diploma Registered.—Florence Charles Burke-Gaffney, Ch.M., Sydney University, 1936.

Deaths Reported.—Douglas Edward Stewart, Mathias Michal Perl.

Alleged Offences.—Evidence obtained with reference to the alleged association of Albert William Bretherton, Erwin Kelmar and Christopher Egland with institutes conducted by lay persons was forwarded to the Crown Solicitor for consideration.

Recognition of British Indian Qualifications.—Further consideration was given to the request received from the Medical Council of India, and it was decided to inquire from the General Medical Council what Indian qualifications are registrable in the United Kingdom.

Application for Restoration to Register.—It was decided to defer consideration of an application for the restoration of the name of Abraham Bertram Cohen to the Medical Register for a period of six months.

A meeting of the Medical Board of Victoria was held on October 28, 1936.

An inquiry was held into the question of erasing or removing the name of Archibald James Aitken from the Medical Register on a charge that he had inserted advertisements in the Press and had thereby been guilty of infamous conduct in a professional respect.

After hearing the evidence the Board decided that if Dr. Aitken was prepared to make a statutory declaration containing an undertaking that he would abstain from any breach of the *Medical Acts* in the future, the inquiry should be adjourned. Dr. Aitken was recalled, made the required declaration, and the inquiry was adjourned *sine die*.

PROFESSOR D. A. WELSH PRIZE FUND.

THIS year Professor D. A. Welsh retired from the position of Professor of Pathology at the University of Sydney after occupying the chair for thirty-five years. Many medical graduates who were students under Professor Welsh, and others who have been associated with him at the university, have expressed a desire to commemorate his work. At a meeting held in the British Medical Association House on November 5, it was decided that those interested should be invited to contribute to a fund which would be used to establish a prize or scholarship in pathology. A committee was appointed to carry out this decision, which has the approval of Professor Welsh. Contributions, which should be sent to the Accountant, University of Sydney, will be acknowledged in THE MEDICAL JOURNAL OF AUSTRALIA.

The following subscriptions have already been received:

£5 5s.: Sir Charles Bickerton Blackburn, Dr. E. H. Molesworth, Dr. J. Foreman, Professor Keith Inglis, Dr. Oliver Latham.

£3 3s.: Dr. Cotter Harvey, Dr. Marjory Little.

£2 2s.: Dr. H. R. G. Poate, Dr. J. G. Edwards and Dr. H. M. Cutler, Dr. R. S. Godsall, Dr. Howard Bullock, Dr. H. H. Schlink, Dr. S. H. Lovell, Dr. G. M. Faithfull, Dr. A. H. Tebbutt.

£2: Professor H. R. Dew.

£1 1s.: Dr. H. S. Kirkland, Dr. C. W. Thompson, Dr. W. F. L. Liggins, Dr. R. I. Furber, Dr. B. P. Anderson-Stuart, Dr. W. L. Kirkwood, Dr. E. W. Rivett, Dr. A. Holmes à Court, Dr. T. A. Daly, Dr. E. H. M. Stephen, Dr. A. G. Butler, Dr. Cecil Purser, Dr. R. V. Graham, Dr. Douglas Miller, Dr. H. O. Lethbridge, Professor C. G. Lambie, Dr. John Leah, Dr. H. T. C. MacCulloch, Dr. H. M. North, Professor H. K. Ward, Dr. T. W. Lipscomb, Dr. R. E. Nowland, Dr. M. Naomi, Dr. L. W. Wing.

£1 0s. 6d.: Dr. A. D. Barton, Dr. E. A. Marshman, Dr. C. W. Dun.

£1: Dr. H. W. Palmer.

10s. 6d.: Dr. K. S. Jones, Dr. G. W. Sinclair.

10s.: Dr. A. W. D'Ombrain.

Obituary.

WALTER SIGISMUND BROWN.

We regret to announce the death of Dr. Walter Sigismund Brown, which occurred at Strathfield, New South Wales, on December 12, 1936.

FRANK SEPTIMUS TANGE.

We regret to announce the death of Dr. Frank Septimus Tange, which occurred on December 13, 1936, at Mosman, New South Wales.

Books Received.

THE PRACTICE OF IONIZATION, by J. N. Dyson, M.R.C.S., L.R.C.P., with a foreword by E. P. Cumberbatch, M.A., B.M., D.R.M.E., F.R.C.P.; 1936. London: Henry Kimpton. Crown 8vo, pp. 193, with illustrations. Price: 6s. net.

TEXTBOOK OF MEDICINE, by various authors, edited by J. J. Conybeare, M.D., F.R.C.P.; Third Edition; 1936. Edinburgh: E. and S. Livingstone. Demy 8vo, pp. 1044, with illustrations. Price: 21s. net.

CUSHNY'S TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS, by C. W. Edmunds, A.B., M.D., and J. A. Gunn, M.A., M.D., D.Sc., F.R.C.P.; Eleventh Edition; 1936. London: J. and A. Churchill Limited. Medium 8vo, pp. 808, with illustrations. Price: 25s. net.

BIOLOGY AND THE NEW PHYSICS, by C. J. Bond, F.R.C.S., F.L.S.; 1936. London: H. K. Lewis and Company, Limited. Demy 8vo, pp. 68. Price: 2s. 6d. net.

THE ESSENTIALS OF CHEMICAL PHYSIOLOGY, by W. D. Halliburton, M.D., LL.D., F.R.S., J. A. Hewitt, Ph.D., D.Sc., and W. Robson, Ph.D., D.Sc.; Thirteenth Edition; 1936. London: Longmans, Green and Company. Double demy 16mo, pp. 361, with illustrations and a coloured plate. Price: 9s. net.

NATURE HITS BACK, by Macpherson Lawrie; 1936. London: Methuen and Company, Limited. Crown 8vo, pp. 180. Price: 5s. net.

A SYNOPSIS OF HYGIENE, by W. W. Jameson, M.A., M.D., F.R.C.P., D.P.H., and G. S. Parkinson, M.R.C.S., L.R.C.P., D.P.H., with a section on Personal Hygiene by G. P. Crowden, M.Sc., M.R.C.S., L.R.C.P.; Fifth Edition; 1936. London: J. and A. Churchill Limited. Demy 8vo, pp. 623, with illustrations. Price: 21s. net.

THE EMANCIPIST: AN HISTORICAL DRAMA IN THREE ACTS, by J. M. Antill, C.B., C.M.G., and R. Antill-de Warren; 1936. Australia: Angus and Robertson Limited. Crown 8vo, pp. 182. Price: 3s. 6d. net.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenencies* sought, etc., see "Advertiser", pages XX-XXII.

FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Junior Resident Medical Officer.

LORD HOWE ISLAND BOARD OF CONTROL: Medical Officers.

NEW PLYMOUTH HOSPITAL, NEW PLYMOUTH, NEW ZEALAND: Resident Medical Officers.

SAINT VINCENT'S HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.

TOTTENHAM HOSPITAL, TOTTENHAM, NEW SOUTH WALES: Medical Officer.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

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